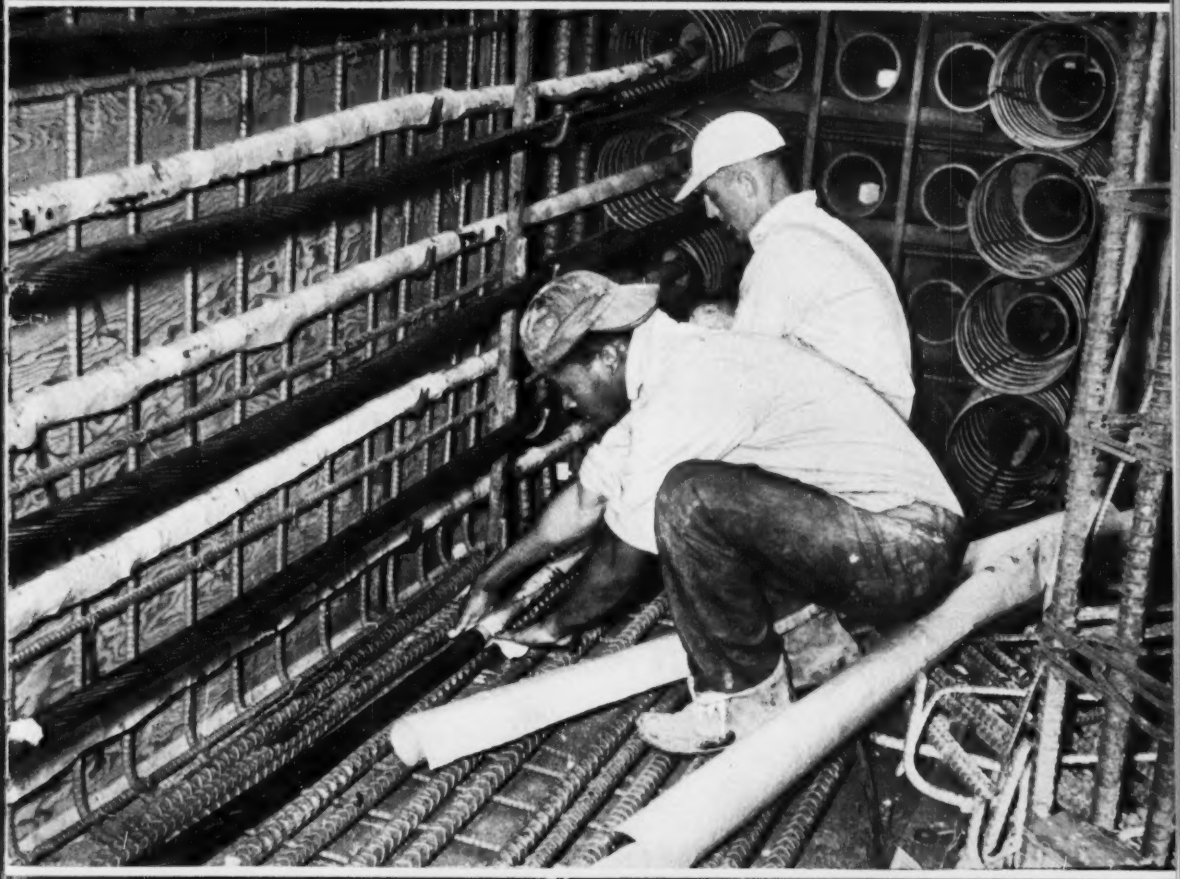
ENGINEERING NEWS-RECORD



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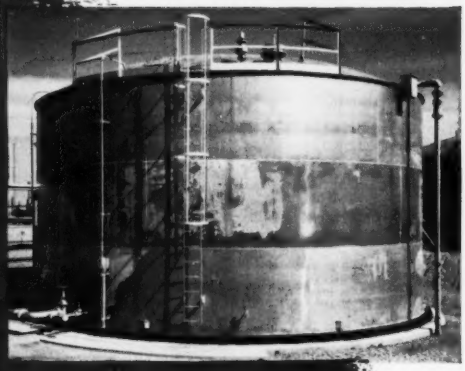
A McGRAW-HILL PUBLICATION

THEY'RE ALUMINUM TANKS BUILT BY C B & I



These Horton *Aluminum* tanks were built to store propionic and acetic acid. A total of five were installed for the U. S. Industrial Chemicals Co. Division of National Distillers Products Corporation at their Brownsville, Texas plant.

Chicago Bridge and Iron Company's engineers, shops and field crews have designed, fabricated and erected aluminum and stainless steel tanks for industries throughout the world. The installations shown here are typical.

The next time you need tanks made of corrosion-resistant materials—solid, clad, or lined—write our nearest office for quotations or information.

Top Right: 120,000-gal. Horton aluminum tank used to store acetic acid. Top Left: 50,000-gal. Horton aluminum tank used to store propionic acid.

Above: A ...oling the umbrella ... and first ring of tank ... of aluminum for U...

...luminum tanks near ...ion and a third being ...ected in the background.

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3 ..... 2125 Haley Building
Birmingham, 1 ..... 1520 North 50th Street
Boston, 1 ..... 1012—201 Devonshire Street
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Houston, 2 ..... 2109 C & I Life Building
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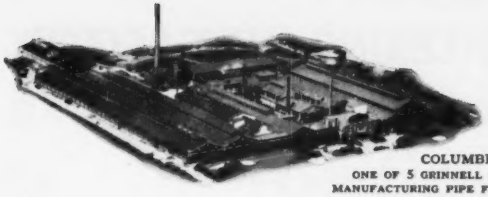
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

In Canada: HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.



COLUMBIA, PA.
ONE OF 5 GRINNELL PLANTS
MANUFACTURING PIPE FITTINGS

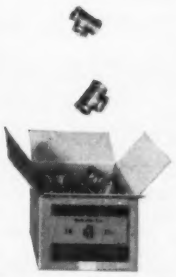
GRINNELL

complete-line manufacturer of high quality PIPE FITTINGS

offers you...

- Complete line of high quality malleable iron and cast iron pipe fittings.
- Large stocks of pipe fittings — mass-produced by skilled workers using modern equipment.
- Dependability — the result of finest materials, equipment and methods; assured by rigid production control and triple inspection.
- Coast-to-coast network of branch warehouses and distributors — making available local stocks of Grinnell pipe fittings.

CALL YOUR LOCAL GRINNELL DISTRIBUTOR

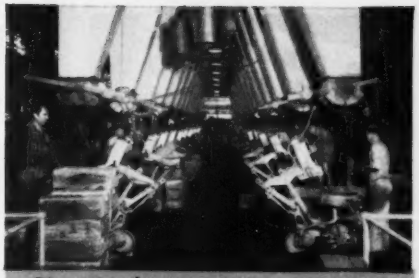


GRINNELL MALLEABLE FITTINGS IN CARTONS

Grinnell malleable iron fittings are available *in cartons* at no extra cost. Cartoned fittings offer you:

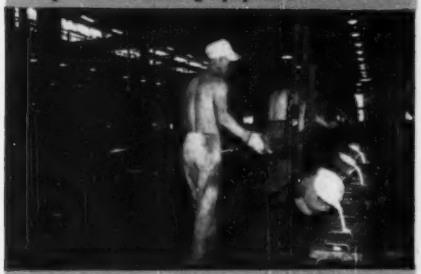
- Faster and cleaner handling.
- Easier storage and shipping.
- Cleaner stocks for resale and use.
- Contents quickly identified by labels.
- Greater accuracy in ordering.

Grinnell malleable fittings are also available in both small bags and large bags.



Dimensional accuracy assured by finest equipment and modern methods of mechanized molding.

Smooth inside finish obtained by the use of the best core sand and the employment of superior core making equipment.



Superior metal, poured into molds on continuous conveyors, gives Grinnell pipe fittings extra strength . . . extra ruggedness.

Accurate chamfer and precision threads, produced by modern tapping machines, provide easy starting and tight joints.

SPECIFY
STEVENS
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TYPE B

Meet the threat of stream pollution with accurate data graphically tabulated with a STEVENS Flow Recorder. Complete flow records simplify task of treating wastes in compliance with anti-pollution laws.

The STEVENS Type B Recorder keeps permanent records of flow and totalizes volume of liquids passing through weirs, Parshall flumes, or other measuring structures. Models also available to record head only, if desired.

- **Standard circular chart automatically records 1- or 7-day periods.**
- **Remote operation available where required.**

Write for FREE Bulletin 25 which gives a detailed description of the STEVENS Recorder, Type B.

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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 149 November 13, 1952 No. 20

WALDO G. BOWMAN
Editor

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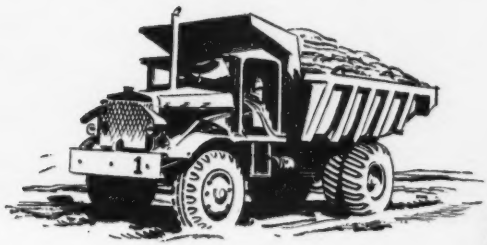
MUSCLE MAN
for tire-killing jobs



THIS burly giant pulls through rough going that other tires find hard to take. Massive lug-bars armor its underbody and sidewalls—shrug off stones, stumps, snags and potholes. Extra thick, self-cleaning treads shield its extra thick plies—give you better traction, *full pull,* forward or reverse. A sturdy standby is this super-tough Goodyear—the Hard Rock Lug. Wherever the going is really rugged, it can save you time and money—perhaps the job itself!

HARD ROCK LUG
Super-tough champ in all types of tire-killing work.

HARD ROCK RIB
Companion tire for front wheels in all tire-killing service. Easier steering, smooth rolling, same cord body, same shoulder and sidewall as the Hard Rock Lug.

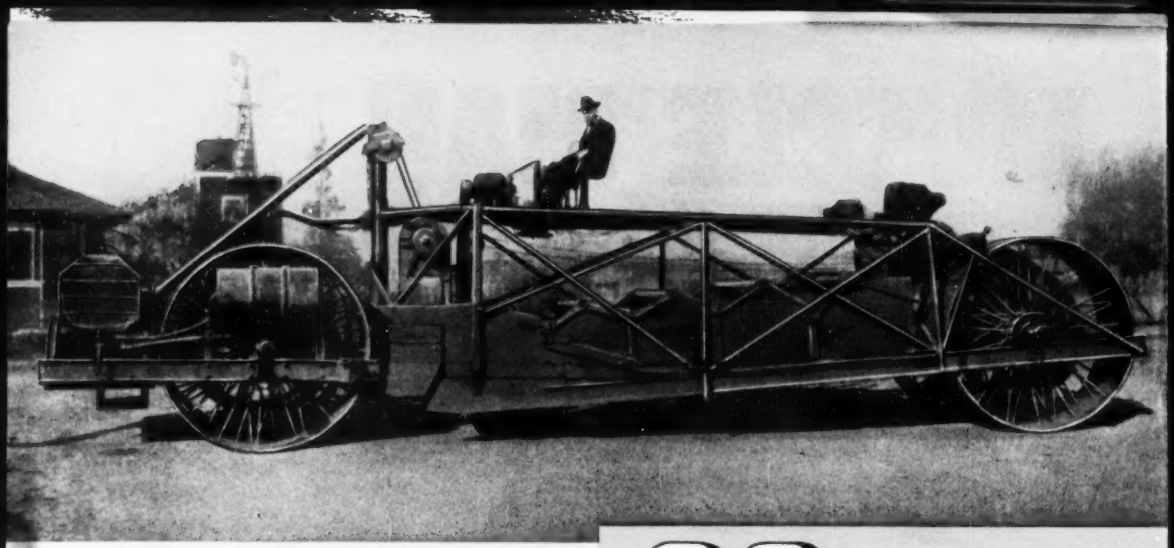
ROAD LUG
This high-stamina, dual-purpose tire is best for trucks that operate both OFF and ON the road. Tough construction and special tread design provide super-traction off the road—long, smooth mileage on the road.

FOR EVERY JOB, THERE'S A COST-CUTTING GOODYEAR TIRE!

Road Lug—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND



30 YEARS OF increases dirtmoving

How LeTourneau "FIRSTS" have

In the beginning . . .

6 yards at 1 m.p.h.

This massive machine bears little resemblance to the other equipment pictured in the pages of this magazine, but 30 years ago it was the newest thing in dirtmoving. Veteran California contractors will recognize it as the *first* self-propelled scraper ever built. It was the product of a young welder and land-leveling contractor named Bob LeTourneau. Bob, like many other inventors, wanted to improve . . . specifically, he wanted to move *more* dirt *faster* and at *lower* cost than was possible with slip scrapers and mules, or tractor-drawn wheel scrapers with their capacities of less than 2 yards. This was his first self-propelled rig . . . an all-welded machine, with 5 telescoping buckets, 7 electric motors, and mounted on steel wheels. It moved 6 cu. yds. at 1 m.p.h., and used positive ejection for dumping.

Yesterday . . .

18 yards at 19 m.p.h.

From that time on, there was no stopping LeTourneau in his search for faster, more efficient dirtmoving. He was the first to perfect a Scraper which carried more than 12 yards . . . the first to use rubber tires in place of steel wheels . . . the first with cable controls, hard-faced scraper cutting edges, scraper aprons and positive ejection, tractor PCU's, Angledozers and Rooters. All these helped increase the yards which could be moved per load, but number of loads which could be moved per hour still was severely limited by the 2 to 3 m.p.h. crawler-tractor. In 1938, LeTourneau licked this problem, too. The *first* rubber-tired, self-propelled scraper, the "Tournapull", was brought out. It carried 18 yards at speeds up to 19 m.p.h. Other Tournapull models quickly followed — including the famous 12-yard Super C, the 15-yard "B" and the 4-yard airborne "D".

LETOURNEAU LET EQUIPMENT

FOR 30 YEARS, THE PIONEER OF MODERN DIRTMOVING

SCRAPER PROGRESS
output 280 times

built lower costs for YOU . . .

Today . . .

42 yards at 40 m.p.h.

Progress from mechanical to simple electric controls came shortly after World War II. Now, an operator sits comfortably in a foam-rubber seat, pushes buttons to steer, shift, and operate the scraper. He can haul 42 cubic yards or 50 tons per load in this Model "A", the largest self-propelled scraper ever built. He has 450 "horses" under him, he can reach 40 m.p.h. speeds, yet with big 4-wheel air brakes and positive power steer, the new Tournapull is far safer than the early brake-steered Super C, or than crawler tractors, or ordinary dump trucks, and even safer than our passenger automobiles. It has constant-mesh transmission, torque converter, disc-type air brakes . . . can turn around in less than its own length, and pull through mud, sand or snow where any other vehicle would bog down.

Tomorrow . . .

100 yards per minute

More dirtmoving progress is ahead . . . developments which rival, and may even exceed those of the past. LeTourneau has already perfected for military use a machine in which the engine is merely a giant generator, producing power for electric drive wheels and eliminating clutch, transmission, differential, and power train. On the test farms, there is a giant loader which cuts hills to grade at the rate of 100 yards a minute, removing dirt and rock on a moving rubber belt. In the LeTourneau research dept., they're even thinking of operating equipment fleets electronically by remote control. Yes, whatever the future, you can look to LeTourneau for better, faster ways to move earth. Their pioneering and farsighted development have *always* helped hold dirt prices down, making it the one commodity which has not increased in price despite the highly-inflated dollar.

Tournapull, Rooter, Angledozer—Trademark Reg. U. S. Pat. Off. 1-156-G

R. G. LeTOURNEAU, INC.
Peoria, Illinois

announcing VICKERS

BALANCED VANE TYPE

HYDRAULIC MOTORS

SIMPLE DESIGN - RUGGED CONSTRUCTION

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HYDRAULIC BALANCE MEANS LONGER LIFE AND LESS MAINTENANCE

CONTINUOUS DUTY RATINGS TO 26 HP

GREATER ADAPTABILITY

(Above) Series 200 Vickers Hydraulic Motors available in two sizes with flange or foot mounting.

(At Right) Series 500 Vickers Hydraulic Motors available in two sizes with flange or foot mounting.

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DYNAMIC BALANCE AND QUIET OPERATION

COMPANIONS TO VICKERS BALANCED VANE TYPE PUMPS

Two series of Vickers Balanced Vane Type Hydraulic Motors are now in production. They offer many advantages for the economical and efficient application of variable speed rotary mechanical power to machine tools, industrial machinery and mobile equipment. Some of their important features are mentioned above; for further information get in touch with your nearest Vickers Application Engineering Office.

Write for NEW Bulletin M-5102

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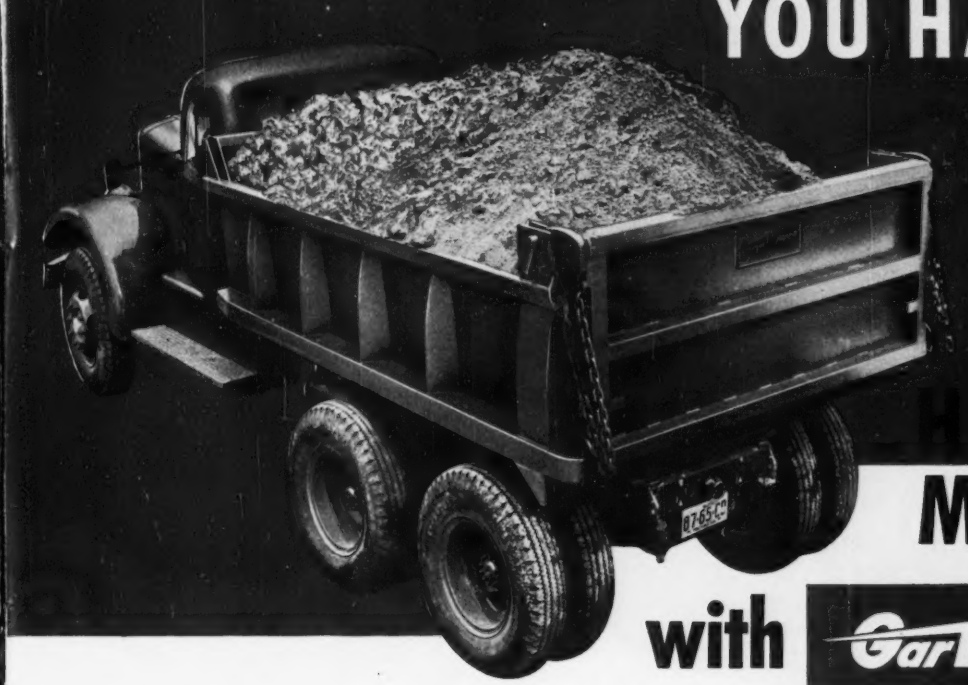
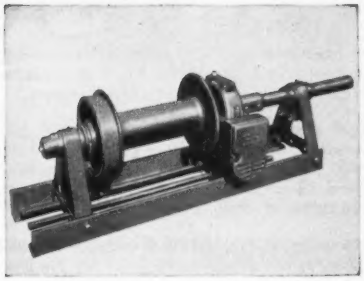
ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

WHATEVER YOU HAUL



HAUL MORE with Gar Wood



If "pull" is your problem, a Gar Wood winch is the answer. Gar Wood winches are tougher . . . last longer . . . are safer to operate . . . require less maintenance. Self-energizing, automatic safety brake stops and holds any load up to winch capacity yet releases fully without drag. Write for information today.

It's True! Whatever you haul, you can haul more in Gar Wood Bodies *without exceeding legal load limits.* Gar Wood Bodies and Hoists are designed and built to eliminate dead weight without affecting vital strength and rigidity. This combination of minimum weight with maximum strength and rigidity assures extra payload—and extra profits—on every trip.

Box-type tailgate construction, forged steel tailgate pins and hooks, plus horizontal box bracing save dead weight yet put extra strength where it is needed to withstand load concentrations when dumping or spreading. Rear corner posts are extra strong to withstand shock loads and maintain permanent alignment. Rear apron is welded solidly to the corner posts for maximum rigidity. Body panels are reinforced with V-type braces to add extra strength without excessive weight.

There's a Gar Wood Body and Hoist Combination in every type and capacity to meet your every operating requirement. Find out today how you can *put more pay in your payloads* by putting Gar Wood Bodies and Hoists to work on your hauling job. Mail the coupon below NOW!

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Please tell me how I can increase operating revenues by using Gar Wood Bodies and Hoists.

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rubber-tired 12.6 M.P.H. Trenchmobile®

. . . makes self-powered moves Parsons rubber-tired 88 Trenchmobile drives anywhere at road speeds up to 12.6 m.p.h. . . . no waiting for trailer, loading or unloading delays. It maintains fast "work-and-run" schedules . . . a job 6 miles away can be started in less than 30 minutes from "now".

Digs up to 20 ft. per minute . . . 8 or 12 in. wide, in depths to 5 feet . . . gives you low-cost, one-man trenching on gas and water mains, off-street service connections, pipe reclamation, underground cables, lighting and sprinkling systems, foundation footings, etc.

Undercuts sidewalks, curbs, gutters, mains With reverse traction and sloping ladder boom, Trenchmobile handles undercutting, makes vertical set-ins flush with foundations, saves hand clean-up. Hinged crumber swings up, out of the way. Positive down crowd on boom starts cut fast, maintains grade in hard soils.

Shock-load protection . . . Dual-purpose friction clutch automatically protects all machinery against shock loads and drives the bucket line. Buckets are high-carbon cast steel . . . and have self-sharpening, easy-in, easy-out "Tap-In" teeth that maintain maximum digging efficiency under all soil and job conditions.

Controlled discharge . . . shiftable, reversible belt conveyor discharges spoil to either side of machine, dodges walls, poles and other side obstructions without swerving from trench line. Discharge height remains constant regardless of digging boom depth.

Hydraulically-controlled backfill blade (optional) doubles Trenchmobile usefulness, lets you handle the entire job of trenching and backfilling with one-man and one-machine economy.

On your work, all these Trenchmobile advantages can mean more jobs completed per day at lower cost, with less supervision . . . and more profit for you. It will pay you to get all the details on this 43.6 h.p., rubber-tired 88 Trenchmobile from your Parsons distributor . . . or send for bulletin. Also check Parsons 5 big heavy-duty Trenchliners®, wheel and ladder types, full crawler mounted, for constant savings on major trenching jobs.

CP2002ENR

Send for Trenchmobile bulletin

to: PARSONS COMPANY, Newton, Iowa

NAME_____

COMPANY_____

STREET_____

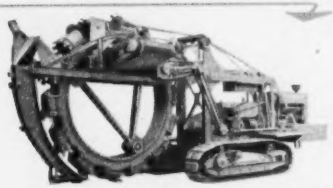
CITY, STATE_____

PARSONS

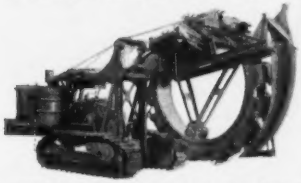
COMPANY • NEWTON, IOWA

(Koehring Subsidiary)

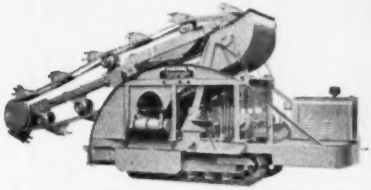
Check work capacity of these 5 Parsons TRENCHLINERS . . .



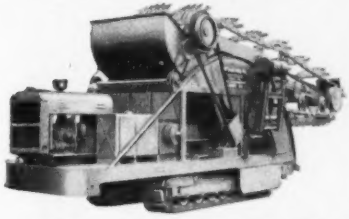
WHEEL-TYPE 202 digs 13 to 31 in. wide, 6 ft. deep; 30 digging feeds up to 18½ F.P.M.



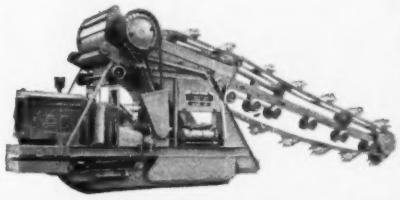
CROSS-COUNTRY 215 WHEEL-TYPE digs 13 to 31 in. wide, 6 ft. deep, up to 18½ F.P.M.



LADDER-TYPE 221 digs up to 13¾ F.P.M., in 16 to 36 in. widths and depths to 8½ ft.



LADDER-TYPE 250 has 16 to 42-in. widths, digs 12½ ft. deep; 30 feeds to 9¾ F.P.M.

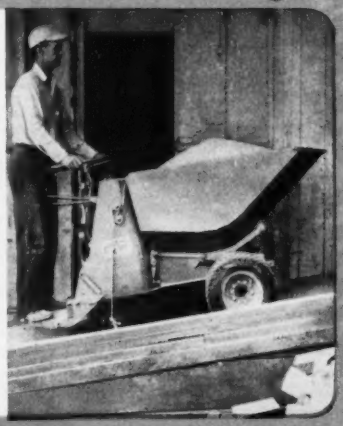


BIG-CAPACITY 310 with single boom digs 18 to 54-in. wide, 17 ft. deep . . . with dual booms it digs 72 in. wide, 12 ft. deep . . . has 45 feeds from 8 in. to 15½ ft. per min.

LOAD 1500 LBS. in Kwik-Mix Moto-Bag©

This low-cost power wheelbarrow, with 10 cu. ft. (struck) hopper, has a 1500-lb. load-carrying capacity . . . climbs 20% ramps fully loaded with operator riding on rear step. Hopper has instant gravity dump with snub-line control. There's full power forward and reverse . . . no push, no pull necessary. 3.6-to-1 gear ratio on large steering wheel gives effortless maneuvering. Interchangeable units: flat bed, 5-foot fork lift, scraper.

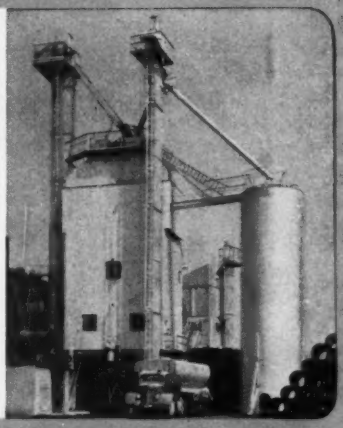
KWIK-MIX *(Koehring Subsidiary)*
Port Washington, Wis.



50 to 3000-YD. Johnson Central-Mix Plants

To meet your exact production requirements, Johnson Central-Mix Plants are available with a choice of 7 types of bins, ranging from 50 to 3000-cu. yd. storage capacities for aggregates and cement. For example, all-welded Portable Section Bins in 100 to 200-yd. sizes, have 4 aggregate and a central compartment for 1 or 2 types of cement. Also check Johnson batchers, silos, elevators, conveyors, hoppers, buckets.

C. S. JOHNSON *(Koehring Subsidiary)*
Champaign, Ill.



NO BLOCKING ON GRADES with Koehring 205

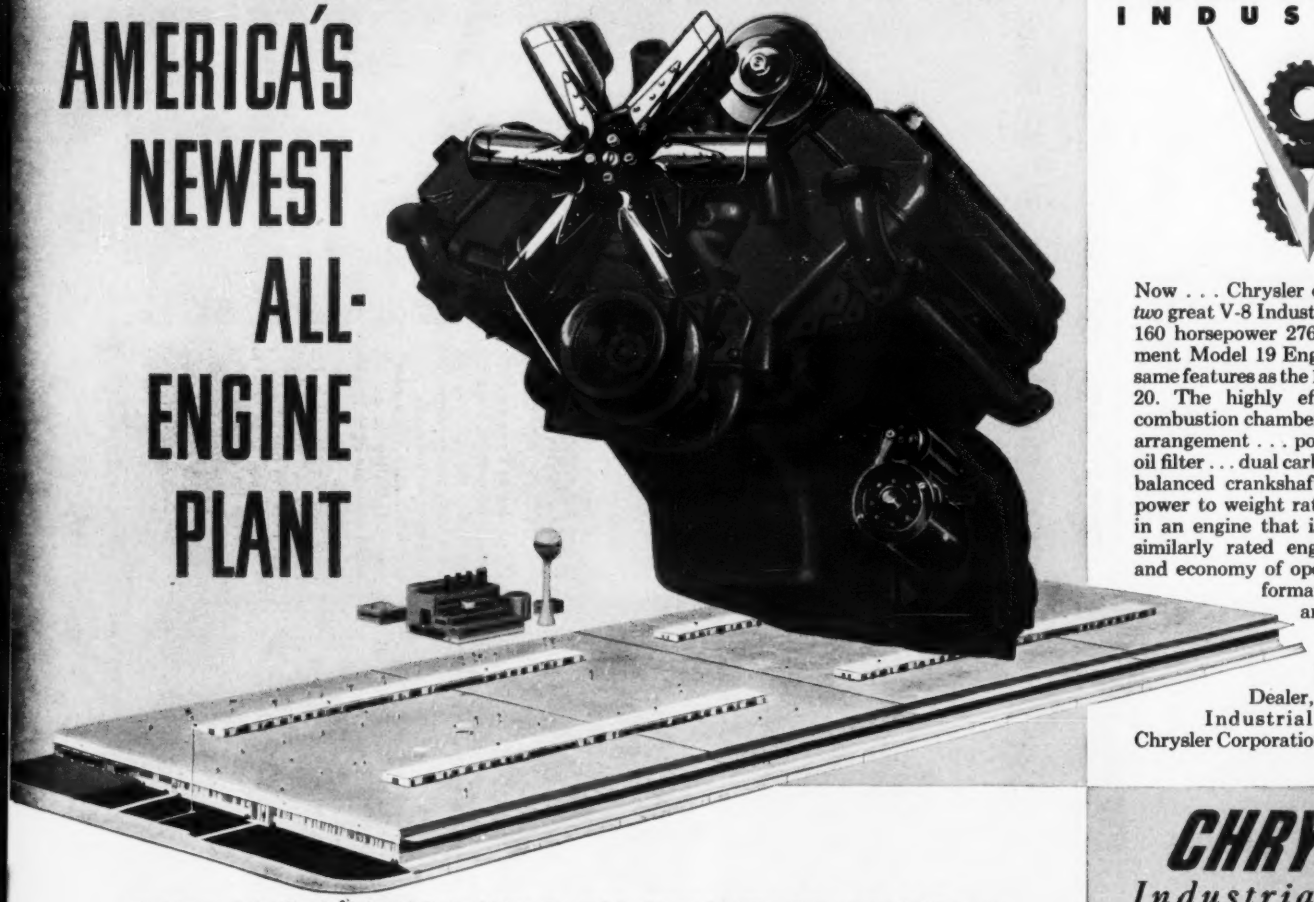
On grades as steep as 30%, there is no need to block the crawlers on this Koehring 205. Big friction brakes, controlled from cab, securely hold both crawlers . . . provide necessary flexibility to cushion brake assembly against operating shocks. No blocking saves time on every job. For excavators or cranes, check your Koehring distributor . . . 4 heavy duty sizes, 7¾ to 79½ tons lift capacity, ½ to 2½-yards dipper capacity.

KOEHRING COMPANY
Milwaukee 16, Wis.

X62

FROM AMERICA'S NEWEST ALL-ENGINE PLANT

Another Great New CHRYSLER INDUSTRIAL



New home of the Chrysler Industrial Engine Division at Trenton, Michigan. This new plant, with more than a million square feet of floor space, gives the Chrysler Industrial Engine Division tremendously increased production, testing, research and developmental facilities. These greater facilities were made necessary by the substantial increase in applications of Chrysler Industrial Power and will better enable the Division to keep pace with tomorrow's even greater demands.

Now . . . Chrysler offers you a choice of *two* great V-8 Industrial Engines. The new 160 horsepower 276 cubic inch displacement Model 19 Engine has virtually the same features as the 180 horsepower Model 20. The highly efficient hemispherical combustion chamber with overhead valve arrangement . . . positive-action full-flow oil filter . . . dual carburetion . . . precision-balanced crankshaft . . . greater horsepower to weight ratio—all are combined in an engine that is second to no other similarly rated engine for performance and economy of operation. For more information on Model 19 or any other of the basic Chrysler engines, see your Chrysler Industrial Engine Dealer, or write: Dept. 611, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.

CHRYSLER
Industrial Engines
HORSEPOWER WITH A PEDIGREE

INSULATED METAL WALLS

for INDUSTRIAL and COMMERCIAL BUILDINGS

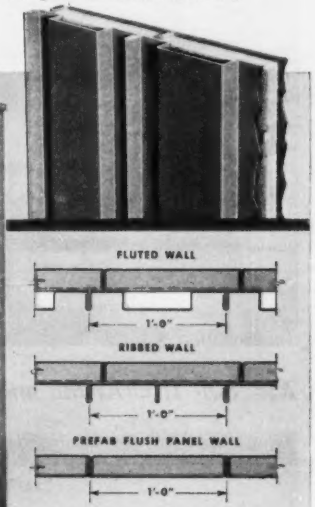
ALUMINUM, STAINLESS or GALVANIZED STEEL

Insulated Metal Walls continue to gain favor with both Architects and Owners throughout the country. And, the reason is obvious . . . these modern walls have revised previous concepts of permanent, firesafe construction. Their lower cost, in both material and labor, and the reduction in construction time—plus the fact that Insulated Metal Walls can be erected under weather conditions which would preclude masonry construction, are just a few of the advantages. Insulated Metal Walls also lend themselves to individual architectural expression in design—the powerhouse illustrated here is a good example. In this building, vertical panels of continuous sash in combination with a Mahon Fluted Metal Wall produces a striking appearance. Mahon Insulated Metal Walls are available in the three patterns shown below. The Mahon "Field Constructed" Fluted or Ribbed wall can be erected up to sixty feet in height without horizontal joints—a feature which is particularly desirable in powerhouses or other buildings where high expanses of unbroken wall surface are common. See Sweet's Files for complete information and Specifications, or write for Catalog No. B-53-B.

THE R. C. MAHON COMPANY

Detroit 34, Mich. • Chicago 4, Ill. • Representatives in All Principal Cities

Manufacturers of Insulated Metal Walls; Steel Deck for Roofs, Partitions and Permanent Concrete Floor Forms; Rolling Steel Doors, Grilles and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.



The Over-all "U" Factor of the various Types of Mahon Insulated Metal Walls is Equivalent to or Better than a Conventional sixteen inch Masonry Wall.

MAHON

HOW DA PRODUCTS HELP YOU AVOID 3 CONSTRUCTION HEADACHES!

1 DARACONE COMBATS EFFLORESCENCE AND LEAKS IN MASONRY

Masonry, being porous, is a two-way street for water. Water soaks IN during wet weather, causing interior leaks; it evaporates OUT during fair weather, causing efflorescence.

THE ANSWER TO BOTH PROBLEMS IS DARACONE!

DARACONE is a clear, high-silicone-content water-repellent that *penetrates deeply* into the masonry, lining pores and hair-line cracks with an insoluble, non-oxidizing film of silicone. This curbs the capillary action by which water is absorbed. DARACONE does not affect the appearance or "breathing" qualities of the building.

Fully effective on new or old masonry buildings in reasonably good condition, DARACONE is easily applied, winter or summer. Tests show that DARACONE is *durable* . . . that one application will last for years.

ASK FOR LITERATURE and FREE SAMPLE of DARACONE . . . TODAY!

Construction Specialties Division

DA DEWEY and ALMY Chemical Company

Cambridge 40, Mass. • Montreal 32, Canada • Chicago 38 • San Leandro, Calif.

2 DAREX AEA PROVIDES CLOSE CONTROL OF ENTRAINED AIR IN CONCRETE CONSTRUCTION

DAREX AEA is the one air-entraining agent specifically formulated for making air-entrained concrete. Highly uniform and not supersensitive, it can be depended upon for close, error-saving control of air-entrainment in ready-mixed or job-mixed concrete.

Concrete made with DAREX AEA places easier, finishes better and faster, has better surface texture, is more homogeneous and more durable when exposed to frost and sea water action.

DAREX AEA is used world-wide in more concrete construction than any other air-entraining agent.

SEND FOR YOUR COPY of twenty-page booklet: "Controlled Air—the 5th Ingredient in Concrete".

3 DARAKOTE GUARDS AGAINST ASPHALT ROADS THAT END UP IN THE GUTTER!

When moisture prevents a close bond between asphalt mix and aggregate, there's trouble ahead! The asphalt strips off onto tires; the aggregate whips off into the gutter; the road just doesn't stand up.

SPECIFY DARAKOTE ANTI-STRIPPING ADDITIVE!

DARAKOTE makes all kinds of asphalt and other bituminous mixtures *stick* — whether the aggregate is *drenched*, damp or bone dry. It *prevents stripping* both during and after construction. It makes the pavement more durable.

At the same time, DARAKOTE saves money! It enables road crews to work despite cold, wet weather, giving more working days in each paving season. And it permits wider use of local aggregates.

For the full story on how DARAKOTE helps avoid strip-off problems in new construction, surface treatment, cold patch and other repair work...

WRITE FOR FACTUAL BROCHURE: "DARAKOTE — the *chemical engineered* Anti-Stripping Additive"

Other DA products of prime value to the construction industry:

DARALITE

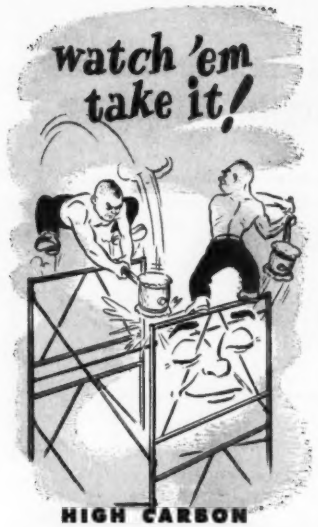
Air-entraining agent for use with lightweight aggregates in non-structural concrete where high percentages of entrained air are desired.

TDA

A catalyzing grinding aid for cement mills. It increases grinding rates of Type 1 cement 15 to 20%; of Type 2 cement 20 to 25%; of Type 3 cement 25 to 50%.

AIRALON

A ready-to-use air entraining agent and plasticizer formulated especially for intergrinding with masonry cement. It contains the saponified resin acids and fatty acids necessary to make a high quality masonry cement.



HIGH CARBON STEEL TUBING DOES THE TRICK!

Safway Steel Scaffolds ENGINEERED TO LAST!

Portable steel scaffolding can offer real advantages—*as long as the equipment stands up.* That's why Safway Scaffolding is the No. 1 choice!

Safway interchangeable parts can *take it*... through countless jobs, and seasons, and years ... without requiring repairs or replacement. Here are specific reasons why:

High Carbon Structural Steel Tubing easily supports heavy loads and strains.

Unequalled Safway Engineered Design approved by Underwriters' Laboratories, Inc.

Master Welders ... exclusively ... produce safe, strong, lifetime welds on Safway parts.

Rust Inhibiting Treatment maintains precision fit of component parts to permit re-use indefinitely.

Baked Enamel Finish on all surfaces, inside and out, for fine appearance and long, safe life.

Get the full story! Learn how you can profit by using Safway's complete line of construction accessories.

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Tubular Steel Scaffolding and Equipment

READER COMMENT

Negative competition

Sir: Regarding the first prestressed concrete bridge in Ohio (ENR Oct. 16, p. 35) the writer is at a loss to understand the "competitive" nature of this construction when five 44-ft spans of it cost $10,465 more than "a 226-ft long, 3-span continuous, steel I-beam bridge." Even under these conditions of competing with spans that average 75 ft, its competition is of a negative nature; i.e., it competes by costing more, not less.

True, the concrete normally in tension is put under compression, and probably, the occurrence of fine cracks is minimized; but since fine cracks on the tension side are utterly inconsequential, what of it?

And what about the stream flow in Moxahala Creek? Does it flow more freely because there is now a pier every 44 ft instead of every 75 ft?

In the present case, there is a valid basis for paying the greater cost of this bridge if the estimated saving of 200 days' time in completion and use of bridge is correct. But this credit item in normal times would not exist. The difference in maintenance cost is but slight.

What the writer would be very interested to read about is of a prestressed bridge of greater than 40-ft spans, say, and not made in a concrete products plant, that cost less rather than more than some other common type of bridge of the same spans.

HOMER M. HADLEY
Consulting Engineer
Seattle, Wash.

[EDITOR'S NOTE: We believe that the contractor's opinion that prestressed concrete is competitive is based on his finding that this pioneering structure was simpler and easier to build than he anticipated. The proof will be forthcoming when alternative designs, including one with prestressed concrete, are bid in the future.]

Tolls should be cut

Sir: I have found great interest in the discussions in your columns relative to toll bridges, roads and tunnels.

There is one feature, however, which I have not seen touched upon, which I think is of considerable importance. Why should not a toll bridge that has been paid for by the taxpayers' tolls become free after its cost has been liquidated, or, at most, a toll charged for only enough to cover maintenance and administrative expenses? In a case such as the Holland Tunnel where the competitive Lincoln Tunnel would not be used with the Holland Tunnel free, I am sure some formula can be developed whereby the public that has paid for one of the tubes could reap corresponding benefits.

Further, tolls should not be used as an indirect means of taxation, nor should these tolls be used to build another toll road or bridge. If a new toll road or bridge is required it should be financed as the first one was, so that specific authority must be obtained, rather than mingling the funds of two developments.

CHARLES MAYER
Consulting Engineer
New York, N. Y.

Wrong address

Sir: This letter is to correct an error in the awards recently announced for our Welded Bridges for Steel Conservation Award Program.

The third award was made to Prof. Thomas Kavanagh and Mr. Leo Coff. The award sheet gave Mr. Coff's address as Pennsylvania State College. The bridge design when submitted indicated this address, but we have since learned that Mr. Coff is a consulting engineer in New York City. We are told he is one of the country's foremost specialists in prestressed concrete.

We regret this error and hope that you will be able to correct this in any announcement that you may make.

C. G. HERBRUCK
James F. Lincoln
Arc Welding Foundation
Cleveland, Ohio

CALENDAR

Building Research Advisory Board, conference on Housing and Building in Hot-Humid and Hot-Dry Climates, National Academy of Sciences, Washington, D. C., Nov. 18-19.

Inter-American Association of Sanitary Engineering, conference, Buenos Aires, Argentina, Nov. 19-30.

American Concrete Pipe Association, short course school for representatives of member companies, Sherman Hotel, Chicago, Nov. 20-22.

Society for Experimental Stress Analysis, Hotel McAlpin, New York City, Dec. 3-5.

American Association of State Highway Officials, annual meeting, Municipal Auditorium, Kansas City, Mo., Dec. 10-12.

Illinois traffic engineering conference, University of Illinois, Urbana, Dec. 11-12.

LEADING CONSTRUCTION MEN AGREE... THE BEST GREASE IS MULTI-PURPOSE UNOBA

Phoenix Tempe Stone Company operates 75 pieces of gasoline and Diesel equipment, principally in highway construction. All are fueled and lubricated with Union Oil products.

R. H. Markham, of the Phoenix Tempe Stone Company, Phoenix, Arizona, expresses the opinion of many construction men in the field when he says: "Multi-purpose UNOBA GREASE protects bearings, reduces wear, and saves time in application, as we find it necessary to use only one grease for all pressure gun applications."

UNOBA simplifies lubrication because it does the jobs that formerly required many different types, grades and brands of greases. UNOBA can do this because it resists *both* heat and water and can be used under almost all operating conditions. Neither boiling water nor dry heat can cut its tenacious film. UNOBA maintains its smooth, buttery texture at temperatures from below freezing to 300° F.!

Prove these outstanding qualities for yourself. You will be amazed by the superior protection it gives in the presence of extreme heat or heavy moisture. You will also understand why Mr. Markham says: "We have used Union Oil products for five years and have found them to be doing an excellent job in lubricating our equipment and reducing our over-all maintenance cost."

OFFICES:

Los Angeles	New York	Chicago	New Orleans–917 National	Cincinnati
Union Oil Building	4904 RCA Building	1612 Bankers Building	Bank of Commerce Building	2111 Carew Tower Building

76 UNION OIL COMPANY OF CALIFORNIA

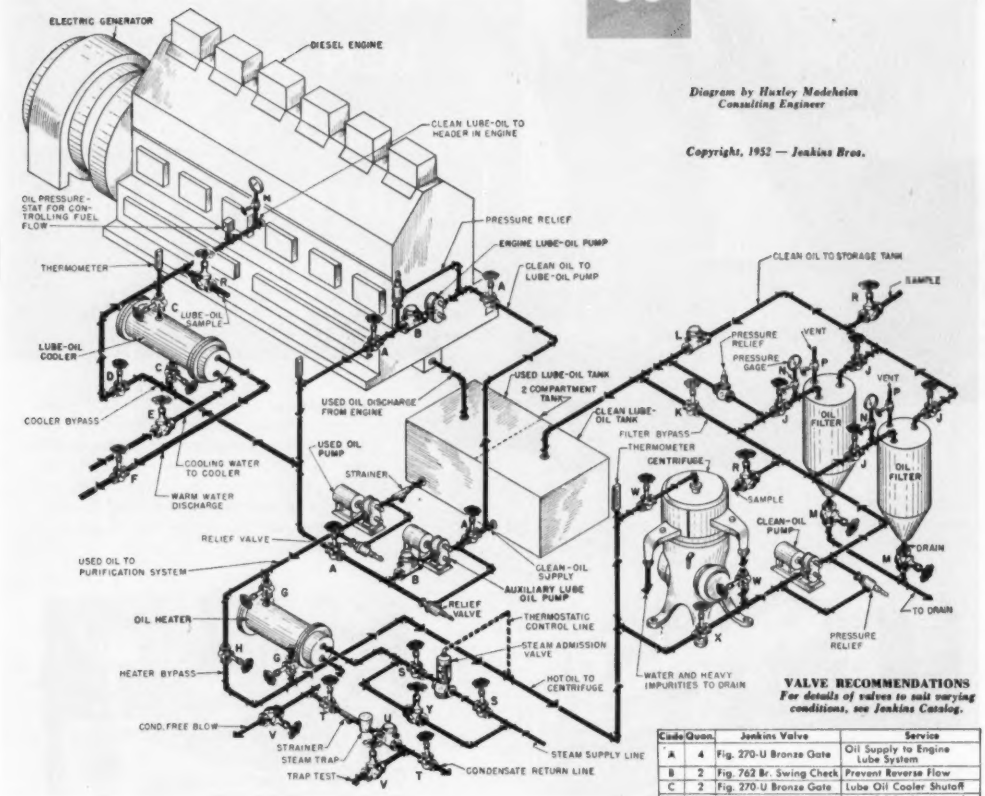


Diagram by Huxley Madeheim Consulting Engineer

Copyright, 1952 — Jenkins Bros.

How to plan a LUBRICATION OIL PURIFYING SYSTEM FOR DIESEL ENGINES

Lubrication oil purification systems are used on practically all modern diesel engines to assure longer oil life and decreased engine maintenance. Purification, however, must be accomplished without removing beneficial oil additives which increase lubricant efficiency and preserve bearing surfaces.

The diagram above shows a typical lubrication oil purification system designed to meet diesel engine needs. Circulated oil from the engine is returned to a tank and part or all of it is pumped through a heater. Here, it is raised to optimum cleaning temperatures. A centrifuge then removes water and impurities. The partially cleaned oil next passes through filters, where light impurities and colloidal carbon are removed.

In normal operation of the diesel, the lube-oil enters a clean oil storage tank, after which it is pumped back to the engine through a cooler, generally a shell and tube heat exchanger with water as the coolant, which reduces oil temperature raised during purification.

Consultation with accredited piping engineers and contractors is recommended when planning any major piping installations.

To save time, to simplify planning, to get all the advantages of Jenkins specialized valve engineering, select all the valves you need from the complete Jenkins line. It's your best assurance of *lowest cost in the long run*. Jenkins Bros., 100 Park Ave., New York 17.

Complete description and enlarged diagram of this layout free on request. Includes additional detailed information. Simply ask for Piping Layout No. 63.

VALVE RECOMMENDATIONS
For details of valves to suit varying conditions, see Jenkins Catalog.

Code	Quan.	Jenkins Valve	Service
A	4	Fig. 270-U Bronze Gate	Oil Supply to Engine Lube System
B	2	Fig. 762 Br. Swing Check	Prevent Reverse Flow
C	2	Fig. 270-U Bronze Gate	Lube Oil Cooler Shutoff
D	1	Fig. 270-U Bronze Gate	Lube Oil Cooler Manual Bypass
E	1	Fig. 950 Bronze Globe	Cool Water Supply to Lube Oil Cooler
F	1	Fig. 270-U Bronze Gate	Water Discharge Shutoff
G	2	Fig. 270-U Bronze Gate	Oil Heater Shutoff
H	1	Fig. 270-U Bronze Gate	Oil Heater Manual Bypass
J	4	Fig. 270-U Bronze Gate	Oil Filter Shutoffs
K	1	Fig. 270-U Bronze Gate	Oil Filter Manual Bypass
L	1	Fig. 762 Br. Swing Check	Prevent Reverse Flow
M	2	Fig. 950 Bronze Globe	Filter Drains
N	3	Fig. 743-G Br. Needle	Pressure Gage Control
P	2	Fig. 950 Bronze Globe	Filter Air Vents
R	3	Fig. 950 Bronze Globe	Oil Sampling Take Offs
S	2	Fig. 270-U Bronze Gate	Steam Supply to Oil Heater
T	2	Fig. 270-U Bronze Gate	Condensate Shutoffs
U	1	Fig. 762 Br. Swing Check	Prevent Condensate Backflow
V	2	Fig. 950 Bronze Globe	Condensate Bypasses Free Blow Trap Test
W	2	Fig. 270-U Bronze Gate	Centrifugal Shutoff
X	1	Fig. 270-U Bronze Gate	Centrifugal Bypass
Y	1	Fig. 956 Bronze Globe	Bypass on Automatic Steam Valve

JENKINS VALVES
LOOK FOR THE DIAMOND MARK
SINCE 1864 JENKINS

Capital investment plans stay high

There's another year—at least—left in the current capital investment boom. Industry now plans to spend almost as much for new plant and equipment in 1953 as in 1952, and more than it did in 1951.

To many, that's the surprising fact which shows up in the preliminary survey of manufacturers' investment plans for 1953, just completed by the McGraw-Hill Department of Economics. This is the first real indication of capital spending plans for next year.

Manufacturing industries will spend about 8% less for new plant and equipment than in 1952, according to the McGraw-Hill survey. Since expenditures by non-manufacturing industries are generally expected to rise, total capital expenditures will not be off much from the current high level if present plans are carried out.

Industrial construction actually will be off more than total capital spending. That's inevitable with the big post-Korea expansion programs approaching completion. A higher proportion of spending will go into equipment, less into new structures, but the fact that capital spending as a whole will stay higher than most economists expected is a good sign for general business—and, of course, for construction.

• **Up here, down there**—Largest declines indicated are in transportation equipment (37%) and steel (17%) considerably less spending than in 1952 is also planned by most machinery and automobile companies. These are defense or "defense-supporting" industries whose large expansion programs are nearing the limit set by planners, as needed to cope with the defense emergency.

However, 1953 plans are still close to—or higher than—actual expenditures in 1951 for all these industries. And one group of durable goods makers, the electric manufacturing industry, would like to spend 15% more for capital goods in 1953. Its program ran behind schedule in 1952.

Plans in industries making non-durable goods show widely varying trends. Oil companies expect to spend more for new wells, refineries and pipelines. Their plans for spending in 1953 call for a 5% increase over 1952. Food companies also plan to invest more in 1953.

The chemical industry, on the other hand, expects to spend less for new plant and equipment—even though it is generally regarded as a "growth" industry. The reason is that expansion in 1952 was so large that, even with further growth in chemical markets, there won't be need to expand capacity at the same pace next year.

Here are some additional sidelights from the survey:

1. There's a great deal of diversity in plans within each industry. For instance, the machinery industry as a whole is planning lower expenditures in 1953. But some sub-divisions—such as office machinery—will spend more. The food group, as a whole, will spend more—but canners expect to spend less.

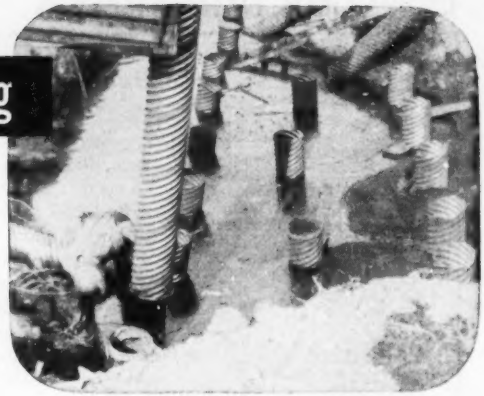
2. The biggest companies are keeping capital spending up; smaller companies are cutting down. Big plans by big companies may reflect the large flow of funds from accelerated depreciation of defense facilities.

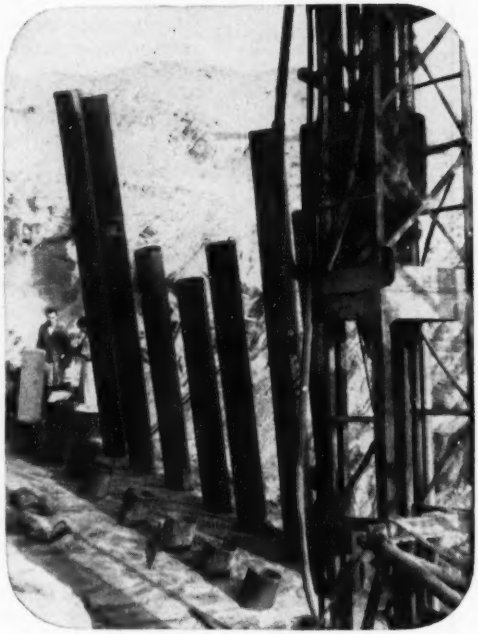
3. Most large companies are continuing to plan for the future. McGraw-Hill's survey last winter showed companies already were planning expenditures for 1953-55. They are still planning for 1954 and years beyond.

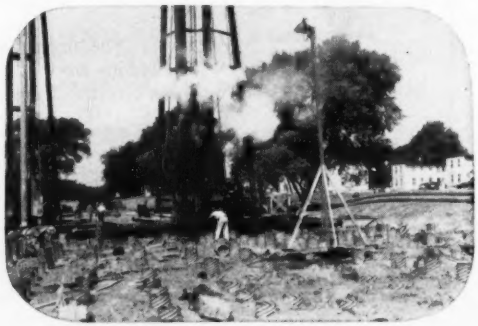
4. However, a good deal of capital spending now planned still could be postponed if manufacturers' sales turned down. One company after another reported that it will change its investment plans—and change them fast—if business is not up to expectations.

Here is economical piling

for all foundation conditions







No matter what size job, loadings or soil conditions are encountered, you can select a type of Armco Foundation Pipe that will insure dependable piling with utmost economy.

The uniform properties of Armco Spiral Welded Pipe Piles assure crush-resistant, watertight piles. A constant cross-section and uniform diameter provide maximum end bearing in good strata and high bending resistance throughout the length. Exceptional roundness and straightness mean fewer rejections and fewer piles with load reductions. Equally important, Armco Piles drive straight and transmit the energy of the driving blow to the point with minimum loss. Even thinner wall piles can be driven with a simple driving head.

Armco HEL-COR Pile Shells are efficient and economical. HEL-COR is a watertight, helically corrugated, extremely straight shell of uniform diameter. Light in weight and easily handled, it is used for drop-in or mandrel-driven shells and for the top portion of composite piles.

Both types of Armco Foundation Pipe are available in a wide range of diameters and in extra-long lengths. You can save money by specifying exactly what you need and by on-the-job welding of salvaged lengths.

For dependable, low-cost piling, specify Armco Pipe Piles or Armco HEL-COR Pile Shells on that next foundation job. Write for complete data. Armco Drainage & Metal Products, Inc., 3402 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO
FOUNDATION PIPE

ARMCO

- **ARBA pulling out of PAR**—Among the less publicized campaign switches is an action of the American Road Builders Association, which is now preparing a statement explaining its reasons for withdrawing support from the much publicized "Project Adequate Roads."

  PAR (ENR March 13, p. 33) was organized by some 40 groups representing auto makers, highway users, and highway officials with the aim of getting some solution to the U. S. traffic problem by presenting it to the public. Advertising campaigns (sponsored by PAR participants) have been a large part of the program.

  ARBA's statement has not been released yet, but the chances are it will cite disagreement over federal aid for highways as the main reason for the withdrawal. ARBA wants more federal highway money, while other PAR members are said to frown on that approach to the financing problem.

- **Optimistic note**—The American Institute of Architects, having surveyed its members, was optimistic about the immediate future of the construction industry:

  In nearly all parts of the country, particularly in the South and West, architects reported they were at an all-time peak of activity. Much of the work was on schools and educational institutions.

  There was one overtone of caution: Smaller architectural offices haven't generally shared in the defense building boom, and have been feeling the pinch on commercial, recreational fields.

- **Used-house lots?**—Development of a used-house market very much on the lines of used car transactions—with the dealer "taking over" the old house as part payment on the new one may be an answer to home builders' problems when the anticipated slackening of demand for new housing sets in.

  According to John C. Taylor, Jr., president of the Prefabricated Home Manufacturers Institute, it would work like this: a purchaser wants to buy a $20,000-home to house his growing family needs. But he has an old house to sell. The builder (backed by a mortgage, say from FHA) would take over the old house for something less than its actual resale value (just as auto dealers do) as a downpayment.

- **Nod to the Delaware**—The long-debated proposal to draw New York City's needed additional water supplies from the upper reaches of the Hudson River was as dead as any political administration could kill it—the nod going to further development of the upper reaches of the Delaware River.

  In April, a committee studying the city's government recommended a two-year study of possibilities of the Hudson. Opposed to the plan, the city's Board of Water Supply went ahead with its own studies of the Delaware watershed—particularly the Cannonsville Project on the Delaware's west branch.

  After considering the matter for six months, the city's administration wrote BWS, advising it not to employ anyone to study the Hudson proposal.

- **Date for St. Lawrence**—The problem of who's going to build the U. S. half of the proposed St. Lawrence Seaway (ENR Nov. 6, p. 19) is somewhat nearer solution, with action of the International Joint Commission setting the date for hearings on Dec. 7.

  That hearing will take up the application of the power authority of the State of New York (See also p. 27 of this issue) to build the U. S. half of the job. The willingness to hold the hearing now reflects a promise by President Truman that—since Congress failed to act on the matter—he would find some U. S. agency to do the work.

  One kicker: It is certain that any permit to the New York authority will contain a preference clause, giving priority to public bodies (such as rural electric cooperatives) in purchase of any power developed.

Announcing
General Motors Better Highways Awards

$194,000 in awards for the most practical solutions to America's critical highway problem

Every American is intensely aware of the inadequacy of our roads and streets to meet today's highway transportation needs. Yet too few have given thought to a practical solution.

It is a difficult problem, because modern highways cost a lot of money. *But lack of them is costing even more!*

To encourage all Americans to think about this critical situation and come forward with practical solutions, General Motors is instituting the GM Better Highways Awards for the best essays submitted on the following subject:

"How to Plan and Pay for the Safe and Adequate Highways We Need"

A total of 162 State, Regional and National Awards will be given for those entries which are considered best by an independent board of five judges. The following have accepted appointment to the board:

NED H. DEARBORN
President, National Safety Council

THOMAS H. MACDONALD
Commissioner, Bureau of Public Roads, U.S. Department of Commerce

CURTIS W. MCGRAW
Chairman of the Board, The McGraw-Hill Publishing Company

DR. ROBERT G. SPROUL
President, University of California

B. D. TALLAMY
Superintendent, New York State Department of Public Works and President, American Association of State Highway Officials.

Entries will be judged for originality, sincerity and practical adaptability — not on literary merit.

To help you in preparing your entry, background information about the present highway crisis has been compiled in "The General Motors Better Highways Awards Facts Book." A copy, containing official contest entry form, will be sent you on request, or can be obtained from any General Motors car or truck dealer.

Contest closes midnight, March 1, 1953. Winners will be publicly announced as soon thereafter as the judging can be completed.

CONTEST RULES

1. WHO MAY COMPETE: Any individual who is a resident of a state of the United States or the District of Columbia may compete for an award, except Contest Judges and the members of their immediate families.

2. WHAT IS TO BE SUBMITTED: Each contest participant shall submit an original essay, with any supporting material or data the participant may desire, on the subject

"How to Plan and Pay for the Safe and Adequate Highways We Need"

3. HOW, WHEN, AND WHERE ENTRY IS TO BE SUBMITTED: To be eligible for award consideration, each essay must be submitted with an official entry blank which may be secured from any General Motors car or truck dealer or by writing to

General Motors Better Highways Awards
General Motors Building
Detroit 2, Michigan

Essays may only be submitted with a completed official entry blank, and must be mailed to the address immediately above.

To be eligible for award consideration, a contest entry must be postmarked not later than midnight, March 1, 1953, and must be received by March 14, 1953.

4. GENERAL REQUIREMENTS AND CONDITIONS CONCERNING ENTRIES: A participant by submitting an essay agrees to be bound by all rules of the contest. Each essay shall be in English, on one side of the paper only, and preferably typewritten. Illegible essays will be automatically disqualified. While brevity is suggested, no limitation is placed on the length of the essay. Participants should use the number of words they believe necessary. No essays will be returned. Upon submission, each essay and the contents and ideas therein become the property of General Motors Corporation which shall have the exclusive right to make unlimited use, in whole or in part, of the same. A participant represents by submitting an essay that its contents, in whole and in part, are original, and participant further represents that such essay has not been submitted, or in any manner disposed of, to other than General Motors Corporation.

5. AWARDS: Contents of essays will be judged for originality, sincerity, and practical adaptability. Awards in the number and amounts listed below will be made as determined by a Board of judges.

SIX NATIONAL AWARDS

First Award, $25,000; Second Award, $10,000; Third Award, $5,000; Three Honorable Mention Awards, each $3,000.

NINE REGIONAL AWARDS

For the best essay submitted from each of nine regional sections* of the United States, each $2,500.

*States included in each region are listed in "The General Motors Better Highways Awards Facts Book."

147 STATE AWARDS

49 First Awards, one for each state and the District of Columbia, each $1,500.
98 Honorable Mention Awards, two for each state and the District of Columbia, each $500.
The selection of award winners will be made from all entries as a group. National award winners will be selected first and thereupon automatically eliminated from further consideration. Regional award winners will be selected next from the remaining entries and will automatically upon selection be eliminated from further award consideration. From the entries remaining after the selection of national and regional award winners, state award winners will be selected. No participant may win more than one award. In the event of ties for a particular award, or in the event that an essay of an employe of General Motors Corporation, or one of its domestic subsidiaries, is an award winner, duplicate awards will be made.

6. ANNOUNCEMENT OF AWARDS: The names of all award winners will be announced as soon as possible after the close of the contest.

7. The decision of the Board of Judges with respect to awards and all other contest matters are final and binding on each participant.

8. The contest and awards made in connection with the contest are subject to all applicable local, state, and federal laws and regulations.

THE GENERAL MOTORS BETTER HIGHWAYS AWARDS

"How to Plan and Pay for the Safe and Adequate Highways We Need"

SIX NATIONAL AWARDS

FIRST AWARD	$25,000
SECOND AWARD	$10,000
THIRD AWARD	$ 5,000
THREE HONORABLE MENTION AWARDS . . . . each	$ 3,000

NINE REGIONAL AWARDS

For the best essay submitted from each of nine regional sections* of the United States . . . each	$ 2,500

147 STATE AWARDS

49 First Awards, one for every state and District of Columbia . . . . . each	$ 1,500
98 Honorable Mentions, two for every state and District of Columbia . . . . . each	$ 500

*States included in each region are listed in "The General Motors Better Highways Awards Facts Book."

Address all entries to: **General Motors Better Highways Awards, General Motors Bldg., Detroit 2, Mich.**

Voters approve $1.3 billion to spur new construction

ENR Staff Report

Voters who deluged the polls in the Nov. 4 election were in a generous mood. They voted approval for a total of more than $1.3 billion in bond issues and loans to finance new construction.

With nearly all returns complete, the balloting showed the bulk of funds approved or authorized falls into these classifications:

- Highway, bridge, and street construction—$430 million.
- Water supply, sanitation, and storm sewers—$270 million.
- School construction—$230 million.
- State, county, and municipal buildings—$75 million.

In addition to opening the flood gates for more construction money, the voters sifted controversial issues such as the proper use of tax revenues, local aid to industry, the creation of new authorities for building construction. Their verdict, on the whole, was a heart-warming one for construction men and engineers.

Here are the highlights of the election results that directly affect construction:

• **California**—A total of $542 million in bond issues for construction was approved by voters in California. Of this total, the three major issues were:

State voters approved a $185-million school construction bond issue, and a $150-million bond issue for veterans' home and farm loans.

Los Angeles overwhelmingly approved a $179-million issue by the county flood control district for a county-wide system of storm drains and run-off channels. Until now such drainage has been up to individual municipalities, but damage from last winter's heavy rains emphasized the need for an integrated system throughout the county.

Los Angeles voters also gave emphatic approval to increasing the bonding capacity of the city's department of water and power. This capacity has been limited by the amount of earned surplus derived from operation of the water and power systems. By removal of the word "earned," $21 million will be added to the bonding capacity of the water system, and $3 million to that of the power system. The department has calculated that to finance its capital extension program the water system will need $12 million more a year than allowed under the old limitation.

In San Francisco, voters approved a $4.7-million bond issue for firehouse construction. They refused to approve a contribution to the cost of building a $500,000 scale model of San Francisco Bay, to study the effect of proposed earthfill bay crossings.

In San Diego County, a bond issue of $10 million to finance construction of a new Hall of Justice fell short of the necessary two-thirds majority. But city voters did approve an issue of $3.5 million for construction of storm drains. This fund will be matched with those of local assessment districts for an estimated total expenditure of $6.5 million.

San Joaquin County voters turned down a proposal to build a $7-million courthouse and jail.

• **Louisiana**—A $115-million highway-bridge-causeway construction package was approved by voters for projects in the New Orleans area. Included were:

1—An additional Mississippi River bridge at New Orleans.

2—An 18-mile long causeway across Lake Pontchartrain from Jefferson Parish near the New Orleans city line (see map p. 22) to St. Tammany Parish on the north shore of the lake.

3—A bridge or tunnel crossing the Industrial Canal in New Orleans.

4—New highway construction and improvements to existing roads in and around the city.

All of these projects hinged upon approval of three amendments to the state constitution. Their approval also opened the way for an additional estimated $15 million of road work in other sections of the state, including the building of bypasses on U. S. Route 90 in south Louisiana.

An involved method of financing for the highway-bridge-causeway projects is provided in the approved constitutional amendments. This arises from the fact that the bridge across the river and the lake causeway will be toll structures. The toll will finance the construction of the structures proper, but not of the approaches or access roads.

The Mississippi River Bridge Authority is hopeful that the bridge without the approaches will not cost more than $40 million. Traffic studies are under way to determine if tolls higher than 30 or 35 cents per passenger vehicle would be feasible should additional money be needed. The bridge authority will issue the bonds needed for the project.

To finance the approaches, voters approved use of the surplus of a gasoline tax now going to the Port of New Orleans as the basis for a $30-million bond issue. Of the $30 million, an estimated $18 million will go to construction of the approaches on the New Orleans side, which will include a four-lane elevated expressway from the bridge to S. Claiborne Ave., a distance of 18 city blocks. The west side approaches would include a new

four-lane highway from Algiers (a west bank section of New Orleans) to Avondale in Jefferson Parish, a distance of approximately 7 mi. Included would be a tunnel under the Harvey Canal.

Federal aid is counted on for both approach projects, and sufficient money is expected to be left from the $30-million bond issue to make possible the $2-million Industrial Canal crossing in New Orleans and the $15 million of road work in other sections of the state. These bonds will be issued by the highway department.

Cost of the causeway across Lake Pontchartrain is estimated at $30 million to $40 million. Bonds to be financed by tolls will be issued by parishes involved. Voters approved another proposal reallocating a highway fund which was set up several years ago to improve road systems in six parishes touching Lake Pontchartrain. At the present time the $6 million is frozen in the fund.

Of the frozen money, $5 million will be used to build approach roads to the causeway in Jefferson and St. Tammany parishes. Included in these roads is one from the causeway to the airline highway, and another from the causeway to a point in New Orleans where it would connect with expressways linked with the proposed new river bridge.

From the same highway fund, built up from revenues from automobile and truck licenses, the voters authorized the use of portions of annual revenue for the following bond issues:

• A $4-million issue to build a highway along Lake Pontchartrain in New Orleans to connect with the southern terminus of the existing Lake Pontchartrain Bridge on U. S. Route 11 with Downman Road in the built-up section of the city.

• A $6-million issue to construct, relocate or improve U. S. Route 51 from its intersection with the airline highway at Laplace northward along the western shore of Lake Pontchartrain.

A potential of many more millions of dollars of other construction was given a green light by voters, with their approval of five other proposals:

1—A port commission will be set up in Baton Rouge with authority to finance docks and other improvements through bond sales up to a limit of $15 million.

2—Parishes, which get credit for 10% of the mineral royalties collected on state lands within their borders, are now authorized to borrow against this "royalty fund" to build tunnels under the intracoastal waterway or other waterways crossing the highways. Parishes involved are in southeast Louisiana.

3—A "balance-agriculture-with-industry" plan (BAWI), whereby parishes, wards and municipalities can sell bonds up to 20% of assessed valuation to build plants for aid to private industries, will be authorized if the present trend of voting continues. This 20% is authorized for schools and 10% for municipal improvements.

4—School districts are now allowed to sell bonds up to 20% of the assessed valuation of property in their districts instead of the 15% now in force.

5—Lakefront development in Jefferson Parish along Lake Pontchartrain will be expedited with the authorization of $30 million in bond issues which will be secured by the reclaimed land, and the lease and sales revenue from it. This will be similar to a $40-million lakeshore development project already accomplished in adjoining New Orleans.

• **New Jersey**—Voters in New Jersey gave overwhelming approval to two state bond issues to finance $310-million worth of construction.

They authorized a $25-million bond issue for enlargement and modernization of state hospitals and penal institutions.

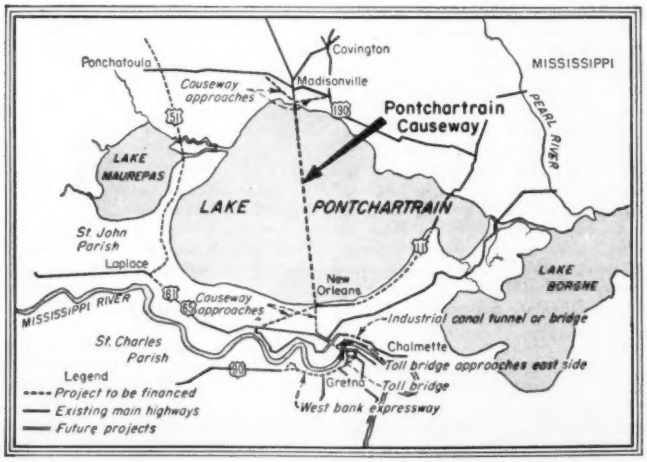
By week's end State Treasurer Walter T. Margetts, Jr., announced that the state would advertise for bids for the issue on Dec. 9.

They also favored use of state credit to back a bond issue of $285 million for construction of the Garden State Parkway (see map above). This issue had been vigorously opposed by the New Jersey Taxpayers Association and both political parties had taken a neutral position. The voters previously had authorized issue of the bonds. Backing them with state credit will mean a lower interest rate. In taking this step, New Jersey is following the lead of New York State which has taken similar action to provide financing for its Thruway. Something of a national pattern seems to be developing for this method of financing new toll highways.

State Highway Commissioner Ransford J. Abbott, who also heads the three-member authority handling the parkway project, said after the election: "We'll construct the entire parkway as fast as the engineers can build it and financial arrangements can be made."

• **Ohio**—Over $100 million in bond issues was approved for construction projects by Ohio voters. Biggest of these were $54 million in bond issues authorized in Cleveland. They include:

Street improvements, $3 million;



street openings and widenings, $3.5 million; offstreet parking, $2 million; freeway participation, $6 million; bridges, $1 million; park improvements, $1.5 million; playgrounds and recreation, $3 million; zoo improvements, $1 million; city hospital and health centers, $3 million; welfare institutions, $1 million; urban redevelopments, $7 million; airport improvements, $6 million; lakefront improvements, $2.5 million; sewers, $7 million; sewage disposal, $6 million. In Cuyahoga County, a $2.8-million bond issue was approved for county hospital facilities, but $4.8 million for a county office building was turned down.

Voters of Columbus and Central Ohio approved bond issues totaling nearly $10 million for new public buildings. Largest projects voted were: Zanesville schools, $1.1 million and Lima sewage disposal plant, $1.8 million.

Cincinnati voters approved bond issues for a $3.8-million street program, a $1.7-million sewer program, and $1.5 million for the University of Cincinnati. A proposed amendment to the city charter providing that no public housing may be built in the city unless a majority of the voters approve the site where the housing is to be built, was turned down. In Hamilton County a $1.2-million library issue failed. A $1-million issue for county roads was approved.

Other Ohio issues approved: Avon Lake, $1.3 million for storm sewers, and $1.4 million for schools; Montgomery County, $6.6 million for a courthouse; Hamilton, $4.8 million for school construction; Steubenville, $2.5 million for a sewage disposal plant; Cuyahoga Falls, $2.3 million for schools; Wickliffe, $1.7 million for street improvements and sewers.

In Canton, eight improvement bond issues totaling $10 million failed of passage. A $1.9-million school bond issue failed in Massillon. Mansfield voters rejected a plan to build 300 federal low-rent housing units.

Elyria approved a $3-million school bond issue and a $1.6-million sewer bond issue. Ashtabula approved a $1.2-million bond issue for a new sewage plant.

• **Maryland**—Baltimore voters, by top-heavy margins, authorized six borrowing programs for public improvements to cost $47 million.

Borrowing authorized by Baltimore voters will pay for water and sewer system improvements, port development, new schools and libraries, and for a replacement for the 19th century city jail.

Voters approved a self-liquidating loan of $17.5 million to build a permanent filtration plant for the Patapsco River project which will increase Baltimore's water supply by 94 mgd. It will also pay for improving Baltimore's water distribution system.

Also approved was a self-liquidating loan of $9 million for port development. This is part of an overall $38-million improvement program envisaged by the Port of Baltimore Commission. Developments will include new piers.

A $5-million loan was approved to pay for new storm drains in connection with new paving, for expanding the Eastern Ave. sewage-pumping station, for improvements at the Back River treatment plant and for separating some lines which now serve as sanitary and storm sewers. Other loans approved were an $8-million loan for construction of a new jail, and a loan of $1 million to build new branch libraries.

Labor law changes

In the two states that put changes in labor laws up to the electorate—Nevada and Arizona—secondary boycotts and strikes and picketing to enforce union membership were outlawed (see page 29).

• **Pennsylvania**—Approval for loans and bond issues totaling $23 million was voted in Pennsylvania. Biggest of these was approval in Philadelphia of the city's borrowing $12 million for improvements to the Philadelphia gasworks, owned by the city but leased for private operation.

Bond issues approved were $1.3 million for a new county prison in Dauphin County; nearly $1 million for school construction in Montgomery County; $2.5 million for school construction in Pittsburgh's suburb, Mt. Lebanon; and others for less than $1 million. Reading approved $3 million in water bonds for street improvements.

Pennsylvania's voters defeated by a 3-2 margin a proposed amendment to the state constitution that would have established the legal means for the commonwealth to retire $215 million in bonds of the General State Authority and the Highway and Bridge Authority. These authorities construct projects by issuing their own bonds and collecting long-term rentals from the commonwealth.

Backers of the measure expected the amendment to save the state money by taking advantage of lower bond interest rates available to it and not to the authorities.

• **Kansas, Missouri**—In Kansas City a $16-million revenue bond issue to increase municipal water facilities was approved by the necessary margin. These bonds call for expansion of the water system in the entire city and in recently annexed areas, and of the municipal water plant in Clay County, Mo. Present maximum capacity of the city's water plant is 130 mgd. The expansion plan will increase this to 210 mgd.

Defeated in Kansas were two annexation proposals, one of which was for additional land in Clay County that would provide a location for a new municipal airport installation costing upwards of $20 million.

Two charter amendments were approved. The first permits the city to make payments on self-liquidating bonds after the facility which is built with such bonds starts producing revenue. The second authorizes the Kansas City Council to give title to the Grandview Airport (in Jackson County six miles south of the city limits) to the Air Force, which demanded this move in order to expedite construction of its $70-million military installation there. In Wichita, $11.6 million in bonds was authorized for additional water supply and sanitation facilities.

Interesting sidelight: In spite of the Eisenhower sweep in Kansas, Democrat Howard S. Miller defeated his Republican opponent in the 1st congressional district. Miller has been a vigorous opponent of the controversial Tuttle Creek Dam project now under construction north of Manhattan on the Blue River, and his surprise victory is credited to his position on that issue.

• **Rhode Island**—Rhode Island voters approved six bond issues totaling $14.1 million. A $1-million bond issue for construction of a new hangar and other facilities for the Air National Guard at the North Central Airport won.

Referendums approved included: A $3-million bond issue to expand facilities at the Rhode Island Hospital for Mental Diseases; a $1.5-million bond issue for new buildings at the Rhode Island Veterans Home; a $600,000 bond issue to remodel the University of Rhode Island science building at Kingston, and a $500,000 recreational development bond issue for expansion of the state's park and beach facilities. Also included was approval of a $7.5-million bond issue to finance the second phase of the self-liquidating Blackstone Valley Sewer District project.

In Providence, voters approved four bond issues calling for a total expenditure of $4.8 million. These include $3.5 million for extensive modernization of the Fields Point sewage treatment plant, $800,000 for

construction of a central parking garage and warehouse, $300,000 for highway construction in undeveloped neighborhoods, and $200,000 for sewers.

• **Kentucky**—Louisville voters approved three bond issues totaling $9 million and voters in Jefferson County (Louisville) voted for a tax increase which will provide funds for a $13.5-million school construction program.

The $9 million in city bonds will build a $2-million police headquarters, provide for major improvements at General Hospital and major improvements and new buildings at the University of Louisville. The county tax increase will permit construction of six new junior high schools at about $700,000 each and 12 new elementary schools plus added facilities.

• **Oregon**—Oregon voters stood behind a major legislative highway construction revenue program Nov. 4, approving the 1951 legislative act raising truck taxes involving ton-mile levies, and rejecting a proposed constitutional amendment which would have prohibited the controversial ton-mile principle.

Heavy duty long-haul operators placed both measures on the state ballot. Oregon Highway Commission Chairman Ben R. Chandler had charged that the tax revenue loss if the measures had carried would involve $17 million annually. However, truckers claimed the measure affected $4.5 million. Officials charged construction of Oregon highways would have been crippled. One measure sought defeat of the act raising taxes generally 7% and on some big combinations as much as 30%.

Also approved: $3-million state Domiciliary Hospital for aged mentally ill, to be built within 20 miles of Portland. Voters of that city approved a $2.5-million bond issue to complete west side sewer lines linking into a new interceptor and sewage treatment disposal plant, and sewer bonds to be paid by water users' fees. Also approved were revenue certificates for construction to improve harbor facilities, warehouses, and terminals on the Willamette River.

Defeated: A $2-million bond issue to convert Vaughn Street's blighted 44-block area into modern light industry commercial district. The proposal, pinpointed on the Northwest district, was one of three comprehensive urban redevelopment plans proposed with federal fund cooperation. Also defeated was creation of a department of transit and parking which would have power to acquire sites and construct parking facilities in Portland.

• **Georgia**—Voters approved by a heavy majority a constitutional amendment allocating all automobile license fees and gasoline taxes for highway purposes. This now gives the State Highway Department assured funds for long-range planning and road construction programs.

• **Alabama**—By better than two-to-one, Alabama voters passed a constitutional amendment limiting use of gasoline tax money and automobile license fees to road improvements only. The approval ended a heated pre-election campaign. Headed by Edward A. O'Neal, chairman of the Alabama Road Fund Committee, 41 state organizations supported the proposal. It was opposed by the Alabama League of Municipalities, the Alabama Association of County Commissioners, and prominent city officials.

• **Arkansas**—Voters turned down a constitutional amendment to permit cities to levy a 1% tax on taxable property to provide funds for sites and construction of buildings to be leased or sold to private industry.

The proposal was supported by several smaller cities in Arkansas which have had difficulty in raising funds by public subscription for this purpose. Present law permits only cities in Pulaski County (where Little Rock is located) to enact such a measure. This provision has never been used. Opposed to the measure was the State Chamber of Commerce-Arkansas Economic Council, which said it would put municipalities into the ownership of buildings to be used by industries and because the buildings would not be subject to taxation. They said this would give such industries an unfair advantage over established, tax-paying industries and would work against drawing in "reliable" industries. They carried their point.

Approved was a constitutional amendment designed to take politics out of the State Highway Commission and removing the commission from the control of the governor. The commission will be reduced from 12 to 5 members, and the director of the highway department will be responsible to the commission rather than to the government. The initial five members will be appointed to staggered terms of two to ten years.

Little Rock voters approved a $950,000 bond issue for its share of a riverfront traffic expressway system to cost $3 million.

• **Minnesota**—A constitutional amendment which would have revised the method of splitting proceeds from motor vehicle license fees in Minnesota was roundly defeated. The proposal was pushed by rural areas seeking to get money from license fees for rural roads.

Under present law, license fees go 100% into the State Trunk Highway Fund. Proposal was to put only 65% into state highways, give 10% to cities, villages and boroughs on population per capita basis and 25% balance to counties for distribution on an intricate scale.

This is the third time that rural areas, seeking to get in on license fees-gas tax revenue in Minnesota, have been thwarted in the last three biennial elections. Two years ago their 50-50 gas tax split was beaten at the polls.

Bond issue casualties included: St. Louis Park, suburb of Minneapolis, rejected $1.7-million bond issue for construction of a treatment plant.

• **Other issues**—In Texas, voters approved bond issues for more than $16 million in construction. In Harris County, which includes Houston, approvals include $5 million for state and county road rights-of-way, $4.5 million for a city-county hospital, $2 million for county parks. In Dallas a $2-million bond issue for a courthouse and jail was authorized. In Ector County (Odessa), $2.6 million in building bonds were authorized.

Voters of Nebraska communities approved bonds totaling $4.6 million and rejected proposals for another $2.1 million. Major items approved were $4.5 million in Omaha, for a 10-year program of street resurfacing and seal coating. . . . Durham, N. C. voters approved a $4-million bond issue for city and county school construction.

In Connecticut, Hartford approved $8.9 million in bond issues for construction—$5 million for schools and $3.9 million for streets. . . . In Denver, Colo., voters disapproved a $3.5-million issue for expansion of facilities at Stapleton Airfield, and a $1.5-million issue for street and construction and repairs.

Montana defeated an initiative which would have raised the tax on highway motor fuels one cent per gallon. It proposed to raise additional highway construction funds to match federal funds. At present Montana lags behind federal offers. In Helena, a $1.7-million bond issue to build a new high school was approved.

In Pierce County, Wash., county-city building bonds amounting to $6 million were approved; Spokane approved $2.2 million in building bonds. . . . Mason City, Ia., voted for $1.2 million in bonds for school construction. . . . In Michigan, Washtenaw Co. voters carried a $2.3 million-bond issue for the construction of a courthouse.

Election shakes up outlook for federal construction

By Sam Justice
Washington Staff

The construction industry has little to fear from a Republican Congress. There will be a lot of talk of economy and cutting back on federal construction, but when it comes time to vote, the cutbacks won't run deep.

The area most endangered is military construction. To make his $70-billion budget target Eisenhower would have to cut deeply into military spending. But at the earliest cutback in military constructions shouldn't come before 1955. Even a 25% cutback of the $3-4-billion military construction program, wouldn't hurt. These programs have been running behind so there is enough backlog to keep the three military services running almost at full throttle for the next year or so.

One sure result of the Republican victory is that Congress will have more to say about construction and the money it votes for it. That means less authority for agencies like the Bureau of Reclamation and the Corps of Engineers. This trend became apparent in the 82nd Congress and had support of Republicans as well as Democrats. And Republicans who will become chairmen of the authorizing committees will pick up the fight to keep Congressional control over the money it authorizes.

• **What's ahead**—Here's the outlook for federal programs containing construction money:

On flood control and rivers and harbors, the Army Engineers will continue to have a friendly advocate in public works chairmen. Senator Ed Martin of Pennsylvania, who will head Senate committee, is a former Army officer and will continue the sympathetic treatment that the Corps has received in the Senate. Rep. George Dondero, Michigan, who will head the House committee, is an economy advocate. In fact, he urged the Corps to de-authorize part of its large backlog of projects when he was chairman of the committee in the 80th Congress. Since the Corps now has shown a willingness to go along on de-authorizing, Dondero is expected to be sympathetic.

Most of the Corps' trouble will come from the Appropriations Committee which was hostile under Democratic chairman Clarence Cannon. Relations can't be expected to improve much under budget-cutter John Taber of New York.

MIKE STRAUS—A sure out as Reclamation head.

But don't look for any sharp cutback in civil works projects. They are too important back home—despite a party policy of promised economies—so the horse-trading and log-rolling will keep project authorizations at their current high level.

One thing is almost certain to result from a change in administration: There won't be near the overlap of federal agencies operating in the flood-control field. Under the Democrats, the Army Engineers, Reclamation Bureau, and Agriculture Department all competed in this field because Truman refused to step in and break up the inter-agency rivalry. Eisenhower, who will be a strong advocate of party harmony, will put agency heads into place fast, if they get out of bounds.

• **Reclamation**—With controversial Commissioner Mike Straus a sure out, the Bureau will have better relations with Congress. The House Interior Committee, for example, which is dominated by western members, will be pro-Reclamation. But there is one important difference. They will insist on having a bigger say in Reclamation policy than in the past. Clair Engle, ranking Democratic member, plans to introduce a bill that will require an agency to come back to the committee for approval before it can substantially increase the cost of any part of a project on which the committee has put a dollar ceiling.

The committee won a fight last summer with the Bureau when the Comptroller General ruled that Reclamation had violated the law in exceeding a $20-million ceiling that the committee had put on the Eklutna, Alaska, power project. There is every indication that the committee will tie dollar ceilings on every authorization it votes in the new Congress.

• **Highways**—Federal highway aid, which is voted on a two-year basis, won't come up in the first session. But it will have to be voted on in 1954 which may make it a campaign issue. Congress voted $175 million more this year than the $400 million President Truman recommended. But because of the lag in highway construction, there won't be any cutback in federal aid. One issue that will face the new Congress: whether to allow federal money to be used on toll road construction. So far, it has not.

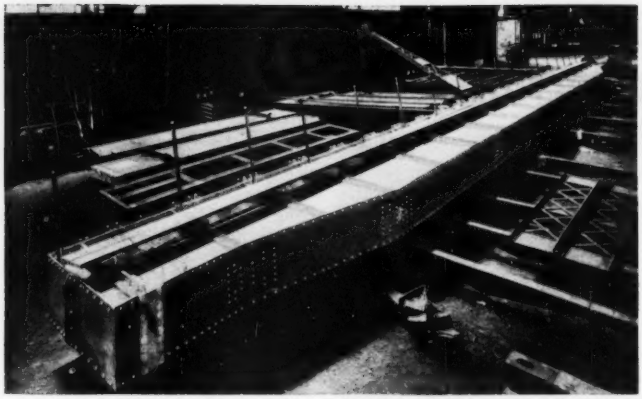
• **Housing**—The two banking committees will take a sharp turn to the right under Senator Homer Capehart in the Senate and Rep. Jesse Wolcott in the House. Wolcott is flatly opposed to public housing and Capehart is like-minded. That doesn't mean that public housing will be killed off by the new Congress, but it is much more likely to come up with a token authorization —5,000 starts—than the 35,000 compromised on this year after the Senate voted for 50,000 starts against the 5,000 voted by the House.

Fannie Mae won't be cut back any in funds to buy mortgages from lending institutions, and Congress isn't expected to tamper in 1953 with housing legislation affecting FHA and VA. Any cutbacks in these programs will have to wait until 1954. Many people in the housing business feel that the National Housing Act with its many amendments needs to be rewritten and simplified, but it's doubtful that the new Congress could accomplish this big job in its first session.

On federal aid for civilian airports, Congress will be asked for more than $40 million, and though it will likely do better than $11 million it voted this year, it won't come near the $40-million mark.

• **Controls**—Government controls will almost surely die an early death under the Republicans. Economic Stabilizer Roger L. Putnam plans to quit as soon as the coal miners' wage issue is settled. Any temporary successor that Truman might name would be subject to replacement when Eisenhower moves in.

Defense Mobilizer Henry H. Fowler and Administrator Richard A. MacDonald of the National Production Authority have both announced that they will leave before the end of the year. The new President will probably appoint successors to convert ODM, DPA, and NPA into skeleton standby agencies.



ALUMINUM GIRDER for an emergency dam at Morgantown, W. Va. Beyond the girders are some of the steel needles used to form the dam. Also shown is the arm used to lower them into place or remove them. Chains at the outer end of the arm are attached to the hooks shown near the lower end of each needle when lowering or raising a needle.

Aluminum used for main girder of emergency dam at Morgantown

Structural aluminum was used to form the main girder of the dam that is to be used to close off the new canal lock at Morgantown, W. Va., in case of an accident to one of the lock gates. A new lock and dam are being built by the Corps of Engineers at that point as part of the modernization of the waterway system of the Monongahela River.

Emergency gates of the type used at the Morgantown lock consist of a main girder spanning the approach chamber of the lock and a series of steel "needles," which are inserted progressively across the channel to close it off. They are supported at the top by the girder and at the bottom by a sill across the bottom of the channel. When not in use, the needles and main girder are stored on the canal bank where they can be picked up by the crane used to assemble the dam in an emergency.

The capacity of this crane must be adequate to lift the main girder and swing it into place across the canal. As the lock chamber at Morgantown is 84 ft wide and 23 ft deep, a very substantial girder was required. Comparisons indicated that a saving of about 50 percent in weight could be made by using aluminum. The aluminum girder shown in the accompanying photo weighs 21,300 lb. It is 88 ft, 7 in. long, 7 ft deep (in the direction of load) and 2 ft 5 in. thick.

In an emergency the girder is placed in a horizontal position (as shown in the photo) with its ends in recesses in the lock wall. Then each needle is picked up by the crane, hinged to lugs along the upstream face of the girder, and then is rotated into place using a lifting arm which is attached to the needle for the rotating movement. There also is a special closure needle.

The aluminum girder and steel needles for the work at Morgantown were designed in the office of the District Engineer, Pittsburgh District, Corps of Engineers, and fabricated by the Pittsburgh-Des Moines Steel Co. at Neville Island, Pa.

Expressway to link with Ohio Turnpike

Although overshadowed by elections last week, highway planning in widely scattered sections of the country was active. Here are the highlights:

• **Construction to start**—Work will begin this winter on the first structure for the $50-million Detroit-Toledo expressway which will connect with the Ohio Turnpike. Michigan Highway Commissioner Charles M. Ziegler announced that bids will be opened in Lansing Nov. 12 for construction of a bridge over the Huron River in the village of Rockwood. Contracts for structural steel for the bridge will be let in advance because steel is on the critical materials list, Ziegler said.

Present plans provide only for the first 31-mi section of the four-lane divided highway which will be built from West Road in Trenton to the village of Erie, just north of the Ohio line, where it will join U. S. 24A. Cost of this section is estimated at $20-million, to be financed by 20-year maturity bond issues to be paid from the state's gas and weight tax collections. Estimated completion date for this section is November 1954.

The second section of the highway, bringing it to Detroit from Trenton, is to be built later at an estimated cost of $30 million.

• **West Virginia fight**—After hearing oral arguments, Judge Ben Moore of the Federal District Court in Charleston has under advisement a suit seeking a ruling on the legality of the West Virginia Turnpike Commission's plans for construction of a $96-million north-south toll highway (ENR Oct. 16, p. 19).

State Attorney General John G. Fox, who ruled in September that the state turnpike enabling act permits construction of a mulitple-lane highway with center division only, told the court that the commission's remedy lies with the state legislature if it finds that it can't raise the funds needed to construct a four-lane turnpike.

The suit was brought by the Guaranty Trust Co. of New York, trustee for the commission's $96-million revenue bond issue which was sold to finance a two-lane expressway. The suit asks for a ruling that the bonds and trust agreement are valid and that the commission should proceed with construction.

Both the trustee and the commission contend that the present project, with the promise of construction of two additional lanes at a future date, complies with the enabling act. They say there is nothing in the law that prohibits construction by stages as the commission plans.

When work was held up Sept. 11 on an order from Gov. Okey Patteson, payment was suspended. The halting of construction, the complaint says, "threatens irreparable damage" to holders of bonds.

• **Kansas Turnpike Authority**—Creation of a Kansas Turnpike Authority drew a step closer last week when an opinion holding that it would be legal was handed down by State Attorney General Harold R. Fatzer. He recommended that a State Supreme Court decision be obtained on the questions involved, however. The proposal to create an authority is expected to be considered by the 1953 state legislature.

• **States plan budgets**—A $94-million highway program for the coming biennium has been approved by the Oklahoma State Highway Commis-

sion for submission to the 1953 state legislature. The program calls for $35 million in new construction in each of the next two fiscal years and $12 million each year for maintenance.

Utah's State Road Commission has recommended a $35-million bond issue to aid in financing the state's highway requirements, which it estimates at $71 million. The commission's proposed five-year program of "urgent needs" would require $51 million in construction, rights-of-way $8 million, bridges and other structures, $12 million.

• **New York at work**—Another large section of the New York State Thruway will soon be under construction in Oneida County. The State Department of Public Works announced receiving a low bid of $5.4 million from Arute Bros., Inc. of New Britain, Conn., for the grading, paving and construction of an 8.81-mile segment of the Mohawk Section and construction of 4.92 mi of access drives and local roads.

Maj. Gen. Sturgis named to head Army Engineers

Maj. Gen. Samuel D. Sturgis, Jr. has been chosen to succeed Lieut. Gen. Lewis A. Pick, who will bow out as Chief of Army Engineers Nov. 30 having then reached the mandatory retirement age of 62.

Formal nomination of General Sturgis for the post will go to the Senate after the new 83rd Congress convenes Jan. 3. His appointment, however, subject to congressional approval will become effective Dec. 1. Sturgis is now commanding general of the Communications Zone of the U. S. Army in Europe.

Frank Pace, Jr., Secretary of the Army, said Sturgis will assume his new post as soon as he ends the business of his present job, probably shortly after the effective date of his new appointment. Maj. Gen. George J. Nold, Deputy Chief of Engineers, will be acting chief until Sturgis takes over.

Realtors optimistic on housing outlook

Opening sessions of the National Association of Real Estate Boards in Miami Beach early this week, heard an encouraging report from Joseph W. Lund of Boston, president.

He said the new political lineup will provide a more favorable atmosphere for private business operations, and asked the association to intensify its drive for slum rehabilitation. He predicted a need for new residences at more than 1,000,000 units a year.

Pier 57 floating-box principle to be used for bridge foundations

Ten of the 15 deep water pier foundations for the Thruway Bridge across the Hudson River between South Nyack and Tarrytown, N. Y., will be water-tight boxes of reinforced concrete constructed similar to those used for three sub-structure sections of New York City's new Pier 57 (ENR Oct. 30, p. 27).

This announcement was made last week with the award to Merritt-Chapman & Scott Corp. of an $11.8-million contract on its low bid for the pier foundations.

The ten boxes will provide a bouyant pier base resting on the silty river bottom. Engineers report that solid rock is too far below the surface at that point to be used effectively and economically for pier support. The air-filled caisson design was chosen to solve the problem.

Two of the water-tight foundation "boxes" will be 184 ft long, 100 ft wide and 40 ft high, and will weigh approximately 18,400 tons. Two will be 120 ft long, 60 ft wide and 40 ft high. The other six will be the same height, but slightly smaller.

• **To be floated**—To construct the 10 boxes, M-C & S will follow much the same procedure it recently used with Corbetta Construction Co., Inc., in building the substructure sections for Pier 57 in a natural dry dock. On completion, the boxes will be towed to the bridge site, floated into exact position, then sunk into place atop specially prepared gravel bases by filling them with water.

When in position, the tops of the boxes will be approximately two feet below the surface at mean low water. Piles will be driven to bed rock through wells in their walls to pin them permanently into place. As construction of the superstructure adds dead weight thrust on them, the water will be pumped from the boxes to effect the desired buoyancy.

Foundations for the five other piers to be constructed by M-C & S under the contract awarded will be built within ten 35-ft dia. circular steel sheet pile cofferdams, two for each double-legged pier. Under an earlier $1,572,849 low bid contract awarded last July, M-C & S is to construct foundations for the 10 easterly piers of the Thruway Bridge, starting at a point about one-half mile north of Paulding Ave., Tarrytown. These will be built within twenty 29-ft dia. circular cofferdams.

Work on the 15 piers under the new contract will begin at about mid-stream and follow an easterly line for almost a mile. It will provide the central link between M-C & S work on the east pier and pier work under way on the western leg by Construction Aggregates Corp.

J. S. Bixby, Poughkeepsie district engineer, will be in overall charge of the project for the New York State Department of Public Works, acting as agent for the authority. M-C & S's work will be carried out by the company's New York Marine and Heavy Construction Division, headed by Vice-president William Denny.

St. Lawrence pact scrapped by Canada

The Canadian government on Nov. 4 notified the United States government that it no longer is interested in the agreement covering joint development of the international section of the St. Lawrence River for navigation and power, which was negotiated in 1941 but never approved by the U. S. Senate.

The Canadians hold that the 1941 agreement has been superseded by the action of the International Joint Commission in approving the application of the two governments for authority to go ahead with power development in the International Rapids (ENR Nov. 6, p. 23).

Meanwhile, the Federal Power Commission, which will begin hearings some time after Dec. 1 on the application of the Power Authority of the State of New York for authority to join with the Hydro-Electric Power Commission of Ontario in building the power features of the St. Lawrence project, has received protests against approval of that application. These have come from the St. Lawrence Project Conference—backed by railroad and coal interests—from the Aluminum Company of America and its subsidiary, the St. Lawrence Power Co., and from the National Coal Association.

Objectors have until Dec. 1 to file protests with the FPC.

A contract has been let by the Canadian government for removal of Gut Dam, a low structure 900 ft long between two islands at the outlet of Lake Ontario into the St. Lawrence River. The dam was built about 1900 to maintain safe water levels in the channel leading to the present 14-ft canal around the International Rapids. This dam would not be needed for the deeper canal Canada now proposes to build.

Farrant loses license to practice in Florida

The Florida State Board of Engineer Examiners has revoked the registration of Civil Engineer Laurence G. Farrant for "gross negligence and carelessness" in the design of a municipal bandshell for the city of Hollywood, Fla.

The board took no action on four other charges against the former Miami engineer, three of which involved design of other structures and one involving dual retainership.

Farrant, who closed his Miami office last July after the charges were filed and suspended his practice, moved to California following the board's public hearing on the charges in Miami in August.

Under Florida law, Farrant can appeal the board's decision to the courts. Since the board was established, the courts have not reversed any similar action it has taken.

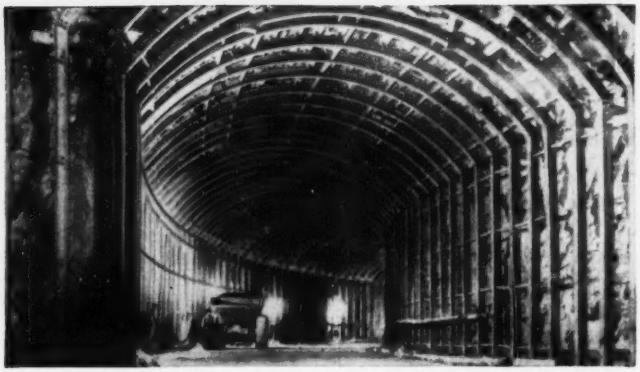
There was no collapse at the Hollywood bandshell job, but four cantilevered beams supporting the roof failed as vermiculite roof slabs were being poured (ENR Aug. 28, p. 22).

Two structural engineers, O. J. Jorgensen of Miami and John L. McCullough of Jacksonville, testified before the board that Farrant's design departed from conventional practice in the way reinforcing bars were placed in the beams. Both said, in their opinion, that Farrant's design called for too little amount of reinforcing steel.

Steel specs changed

The American Society for Testing Metals is now in the process of putting into effect revisions in structural steel and steel boiler plate specifications to raise the requirements for elongation 2 in. It has also rearranged and revised the various clauses in the specifications covering modification in elongation for material under 5/16 in. thick and over ¾ in. thick. The revisions for the most part tighten the permissible modifications in elongation.

Other recommendations made at the fall meeting of the Administrative Committee on Standards include: revisions in tentative specifications for air-entraining portland cement; revisions of tentative specifications for mortar for unit masonry to include a portland cement-masonary cement mixture; changes in tentative specifications for materials for soil-aggregate subbase, base and surface courses to put specifications for soil-aggregate highway materials on a more logical systematic basis.



This is the entrance to the three-story "Underground Pentagon" 65 mi north of Washington, D. C., which would be used by the military if the Capital area were bombed.

Army discloses data on sub-Pentagon

Army security last week inadvertently lifted the curtain on construction of the underground communications center for the three military services at Fort Ritchie, Md., near the Pennsylvania line. The emergency center, encased in the core of Raven Rock Mountain, is designed to take over communications for the military establishment should a bomb hit the Pentagon.

Newspapers in surrounding cities—even in Washington, D. C., 65 mi from the project—have been publishing intimate, if somewhat fanciful, descriptions of the job for more than a year and a half. But the Army continued to maintain an abortive "classified" and "restricted" ban on release of any information.

Last week the Washington District of the Corps of Engineers accidently parted the red-tape veil in an official publication. In a centennial book reviewing its 100 years of activity, the district office printed the picture that appears above and added several hundred words of relevant comment.

• **$35-million cost**—The Fort Ritchie project, says the text, calls for building a joint supplemental communications facility at an estimated cost of $35 million. Major features are:

1. A communications center designed to resist atomic bomb attack, inside Raven Rock Mountain, about five mi east of Fort Ritchie. It has been dubbed the "Underground Pentagon," says the report.

2. Conversion of Fort Ritchie to house the personnel connected with operation of the completed project.

Most interesting construction aspects of the project are to be found at Raven Rock, the report goes on to say. Here, 500,000 cu yd of the hardest rock on the East Coast was blasted out and hauled away in ten months.

In this hole, the report states, a three-story building is being erected. The building stands behind two heavy steel blast doors that close the tunnel openings during an alert.

ENR Construction Reports show that the contract for the three-story building and incidental work was awarded May 6 to the George A. Fuller Co., on a competitive low bid of $7 million. As described in the proposal, the underground building is a steel frame structure with metal siding and roof, containing about 220,000 sq ft. of floor area. The contract called for completion in 270 days.

Engineers for the Fort Ritchie project are Parsons, Brinckerhoff, Hall & Macdonald, of New York. The architects are Shreve, Lamb & Harmon.

A dispute over a negotiated contract delayed the start of construction on the underground building. A surprisingly low estimate was offered for negotiation by John McShain, Inc.

When the District Engineer attempted to enforce the proposal as a binding contract, McShain refused to accept it—particularly after the Army Engineers on Defense Department orders terminated a $9-million contract with the firm for above-ground buildings at Fort Ritchie.

Comptroller General Lindsay C. Warren closed the case in February when he decided that McShain stood on firm ground in refusing the contract (ENR Feb. 28, p. 25). The District Office then hastily prepared revised plans for public bidding, followed by the award of the Fuller contract May 6.

McShain later was awarded a $1.8-million contract (Aug. 6) for three buildings at Fort Ritchie.

"Right-to-work" law passes in Nevada

The only two states that acted upon state labor law proposals at the last election were Arizona and Nevada. Arizona outlawed secondary boycotts and Nevada halted strikes and picketing to enforce union membership. Here is how the voting went in the two states:

• Nevada voters passed by a narrow margin a "right-to-work" initiative petition that prohibits denial of employment to non-union workers and makes illegal any picketing or striking to force non-union employees to join a union.

• Arizona voters passed a Fair Labor Practice Act making it unlawful for a labor union to picket any establishment unless a bona fide dispute over wages or working conditions exists between the employer and a majority of the employees. The act also prohibits secondary boycotts.

The Arizona measure was sponsored by the Retail Druggists Assn., and was aimed primarily at the restaurant and bar union in Arizona which has been picketing non-union employers to force employees to join. This union is the third largest in the state. Unions of miners and laborers are larger.

An Arizona general contractor said that the effect of the Fair Labor Practice Act will be a long-range proposition.

He did not expect that things would get better immediately.

The labor situation in the state is fairly stable now. There is only one outstanding dispute in Tuscon where a contractor building a new high school purchased brick from a non-union yard and all trades stopped work. The job has been held up for about two months since then.

Most contractors see no more effect on construction than on other industry in the state and believe that the new law will tend to stabilize operations of all business in the state.

Other looked for effects will be to eliminate quickly strikes and illicit picketing and halt strike delays of completion.

• Nevada—A hotly—and expensively—contested proposal passed by a 38,250-to-37,145 vote in Nevada.

Picketing by the culinary union in Nevada had aroused considerable antipathy, especially when it resulted in a strike of all waiters and bartenders during an Independence Day rodeo weekend in 1950—a strike keenly felt in a state which depends heavily on the tourist business for its income.

The Nevada legislature considered the passage of such a law in 1951, but failed to act. The initiative petition was then placed on the ballot.

The issue was furiously fought, with heavy advertising purchased by both sides—a Nevada citizens committee on one side, unions on the other. The citizens committee placed two full-page and two quarter-page ads in a single issue of a Reno newspaper on Election Day citing a similar Arizona law which has been in effect since 1946, and under which hourly and weekly wages in that state have risen an average of 52%. The law has been upheld by the U. S. Supreme Court.

Labor spokesmen attacked the proposal as leading to "wage cuts," "smashed unions" and "an end to labor's gains."

Nevada at present has an open-shop law—the initiative petition endorses and strengthens that law. Proponents of the act claimed that union leaders had said that if the petition failed to pass, the action should be taken as a mandate to the 1953 legislature to erase that law, and that they would press for such repeal.

Discrimination

A "permit" cement mason discharged by the Morrison-Knudsen Co. and the Peter Kiewit Sons Co. at their Anchorage, Alaska, construction project has won reinstatement and back pay in a Taft-Hartley complaint decided by the National Labor Relations Board.

The two big construction companies are jointly working on an Army building project in Alaska.

According to NLRB, the companies followed a policy discriminating in favor of members over non-members of the AFL Plasterers and Cement Finishers.

Under the policy, a so-called "permit" is dispatched by the union to a job only if no "book members" are available. A worker is admitted to "book" status after he has paid $1 a day union dues for 150 days. Until the 150-day period has passed, a worker is issue a daily work "permit" for a $1 fee.

The company discharged the complaining "permit" man to make room for a "book" man recommended by the union. The board ruled the firing amounted to application of closed-shop conditions, in violation of the Taft-Hartley labor law.

Both the union and the companies were ordered to make up any loss suffered by the worker as a result and to put him back to work without objection if he so desires.

Encouraging union joining gets firm an NLRB fine

The Vollmar Construction Co. will pay a discharged employee more than $100 as a result of a Taft-Hartley law violation.

According to a ruling by the National Labor Relations Board, on the basis of a stipulation settlement, the worker will receive the money for loss of pay suffered by his dismissal on the basis of non-membership in the local AFL operating engineers union.

The company, which has been engaged as a sub-contractor on a power plant construction job for the Central Electric Power Co-operative at Chamois, Mo. was also ordered by NLRB to cease encouraging membership in the union by refusal to hire or by discharging employees. Although not mentioned in the order, apparently some type of hiring hall arrangement with the union was involved.

• Secondary boycott—In another NLRB development, the general counsel has ruled in favor of a complaining construction company in an administrative decision.

NLRB policy is not to reveal names of parties involved in such rulings.

The company appealed the refusal by a regional director to issue formal complaints on a charge that a union was conducting a secondary boycott strike against the company's construction project.

According to the company charge, the union set up the picket line because of a dispute with the company who had contracted for the building job.

The union had no dispute with the construction company, but cut off entry to their job site by picketing. The construction workers would not cross the lines, and work had to be suspended.

The general counsel reversed the ruling by the regional director and found that the striking union had caused the workers to stop work in an effort to compel the construction company to cease doing business with the struck company.

Wage increase granted by arbitration

An overall wage increase of 39¢ to 40¢ an hour for operating engineers employed by three Philadelphia contractors' groups is part of an arbitration award made last week by George W. Taylor, professor of industry of the University of Pennsylvania's Wharton School.

Approval was granted by the Construction Industry Stabilization Commission of the Wage Stabilization Board. The 50-page award wrote finis to the 110-day engineers' strike of last summer (ENR Aug. 28, p. 29).

In actual figures the award provided hourly increases of 15¢ for workers in building and heavy construction and 14¢ for highway construction workers. Last September, while arbitration was under way, both sides agreed to a 25¢ increase with Taylor's approval. Both awards are retroactive to May 1, bringing the total to 39¢ and 40¢.

About 100 employers are directly affected. They are members of the Contractors Association of Philadelphia, the General Building Contractors Association and the Pennsylvania Excavators Association. The workers are the 1,000 members of Local 542, International Union of Operating Engineers, AFL.

The provisions of the award have been written into a contract extending to April 30, 1954, but with a wage reopening clause for May 1, 1953. The new contract does not need approval by the union membership which last August approved the strike-settling proposal of Federal Judge Alan K. Grim. The wage boost is the first that the engineers have had since May 1, 1949.

The new increase brings the hourly rate, on a pay-by-the-week basis, to $3.30 for most skilled workers, such as operators of derricks, power shovels and cranes. The rate is a little higher if it's paid on a daily basis. The rate on the weekly basis for the industry's lowest paid workers, oilers and apprentices, will now be $1.90. These rates apply to building and heavy construction workers. Highway workers will get about 10¢ an hour less.

• **Bargaining points**—Originally the union asked for parity with New Jersey engineers' rates. This would have meant a considerably bigger increase. This was dropped when it was indicated during the arbitration hearings that government approval of anything above the 40¢ increase was considered out of the question.

In the arbitration, the employers asked for a list of special conditions to go along with wage increases. These included: elimination of the so-called guaranteed work week, limitation of overtime pay to time and a half and elimination of compulsory employment of pump and compressor men. Taylor refused to grant them, saying they were "not supportable."

The arbitrator also refused to consider a pension plan proposal by the union. If such a plan were approved, however, the wage increase would have been decreased to comply with CISC regulations.

The union, particularly Roy Underwood, deposed local head (ENR Nov. 6, p. 32), insist on pre-arbitration negotiations on a safety code. Underwood was later barred from participation in the arbitration hearings.

Taylor's statement on the safety code pointed out that it has been proved that voluntary cooperation is better than a written agreement.

• **Agreements**—Other clauses of the award, settling hard-fought issues provide:

• Employment of a master mechanic when seven or more engineers are employed on a project.

• Payment by employers of 10¢ for every hour worked by an engineer into an "interim health and welfare fund." This fund is at the present time being administered by Taylor as a court-appointed master.

• Renewal or extension of the contract as provided by the international union's constitution. This calls for approval of an extension by local business agents and the international executive board. This provision was intended to head off any further fights such as the one the union and employers got into in 1951 over whether the contract signed in 1950 was for one year or two.

2,000 in 10-day strike over work jurisdiction

Expansion of General Electric atomic and jet operations at Lockland, Ohio, was held up 10 days because of a jurisdictional strike by 2,000 members of AFL building trades unions (ENR Oct. 30, p. 29).

The strike began Oct. 20 when General Electric refused to yield to demands of the local AFL Building Trades Council that a contractor employing its members be retained to install a monorail in the plant in which GE makes gas turbines for jets. The installation was being done by GE's own maintenance employees, members of the AFL International Association of Machinists. The machinists are not in the AFL Building Trades Dept., so the dispute did not come under the National Joint Board for Settlement of Jurisdictional Disputes in the construction industry.

The strike also stopped work on expansion of the government-owned aircraft nuclear propulsion project, which GE operates.

GE had filed jurisdictional dispute charges under the Taft-Hartley law when the building trades unions called off the strike. In previous situation of this kind in other parts of the country, also involving GE, NLRB ruled against the building trades.

BLS wage index up 1.3% for third quarter of year

Union craftsmen in the building trades got a significant raise in wages between July and October of this year, according to the U. S. Department of Labor's Bureau of Labor Statistics.

BLS said that, based on an 85-city survey of the 7 major trades, there was a rise of 1.3% in the wage scale for these trades. This is almost twice the percentage rise experienced last year during the same quarter.

Not all the 585,000 workers participated in the increase but a fifth of them did get an increase.

Greatest gain—4.8 cents an hour—was gotten by the plasterers. Next in line, the carpenters, upped their average wages by 4.3 cents an hour.

In dollars per hour, the bricklayers lead with an average of $3.22.

As of Oct. 1, 1952 union hourly wage scales are 27% above the average for the three years (1947-49) preceding the outbreak of the Korean war.

Union constitution

Last week, the bricklayers' union, meeting in Minneapolis, Minn. (ENR Nov. 6, p. 31), took an action which had been rumored before the meeting. They adopted a resolution changing the constitution to permit International Secretary John J. Murphy to become president in the event President Harry Bates became unable to continue in office.

The union also voted approval of Bates' suggestion that union contracts hereafter provide that at least one worker over 65 years of age be hired for every five bricklayers on a job.

World's largest underground power plant

L. L. Wise
Associate Editor

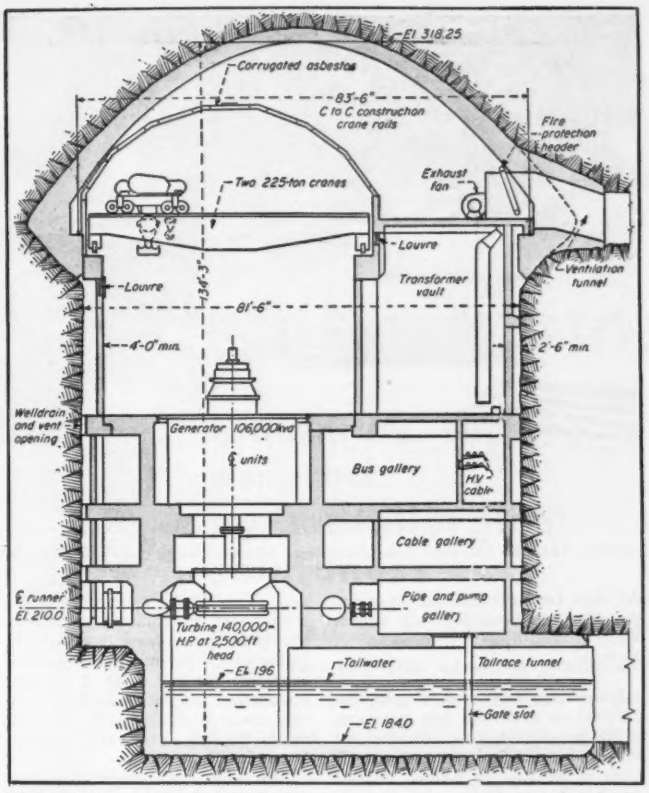
A brilliant rock moving show is now at its height at Kemano in northern British Columbia. On literally dozens of headings, granitic diorite is being blasted, mucked and hauled out of the heart of a mountainside. Purpose is to construct what ultimately will be the world's largest underground power plant to serve the world's largest aluminum smelter. (ENR Nov. 29, 1951, p. 40.)

Principal players in this rock moving drama are the owner—Aluminum Company of Canada—and the prime contractor for the power project—Morrison-Knudsen Company of Canada. The supporting cast includes 4,500 construction workers with more than half of these employed in excavation operations or in support thereof.

The entire project is complicated by the 440-mile distance from Vancouver as was explained in an article on the logistics of Kemano in ENR, Sept. 25, 1952, p. 32. The underground work is made complex by the myriad headings in the powerhouse, the power tunnel, the main penstocks, the unit penstocks, the unit tailraces, the valve chamber, the transverse drifts and several access tunnels.

The underground cavern for the powerhouse could contain a 14-story building, 80 ft wide and two city blocks long. In actuality the chamber is shaped something like a loaf of bread. The main body is 81½ ft wide but the arch at the top is extended to a 110-ft width, so that the reinforced concrete roof can be rested on relatively undisturbed rock. Height of the excavation from the bottom of the unit tailrace excavations to the roof arch is almost 140 ft. Length for the full sixteen 106,000 kva generator development will be 1,134 ft, but only 700 ft is being dug now. This will provide space for 8 units, with 3 generators to be installed in the current program. It will also provide space for the erection and access bay as well as clearance space to permit expansion to full length.

Ultimate development includes two 10-mile, 25-ft dia horseshoe power tunnels. At present only one is being dug with work under way on four headings. The tunnels will be unlined except at needed.



THE UNDERGROUND POWERHOUSE of the Kemano project in British Columbia is being built in a rock cavern 82 ft wide, 140 ft high and 700 ft long.

Connecting each tunnel and the powerhouse are to be two steel lined, concrete backed, 11-ft dia penstocks. These step down the mountainside at a 48-deg angle and provide an average gross head of 2,585 ft. Two penstock tunnels are now being dug but only one will be lined for the initial development.

A spectacular 5,400-ft long aerial tramway is used to carry men and materials to the penstock and power tunnel construction high on the side of the Kemano River gorge. This will be described in a later ENR article.

• **Why underground?**—There are many substantial reasons for placing the penstocks and powerhouse underground at Kemano—aside from the obvious one of less vulnerability to enemy air attack. For one thing, the penstock or pressure part of the system is cheaper to build. Being underground it will need less steel, be shorter and require no massive anchorages perched precariously on steep slopes. The steel liner of the penstocks is being backed by concrete—in actuality preplaced aggregate with mortar pumped in later. Result is an integral mass of steel, concrete and natural rock resisting pressure stresses. Thus, less steel is required. And since the powerhouse is 1,400 ft inside the mountain mass, a shorter length of pressure conduit is necessary (but longer tail-race and access tunnels must be provided).

An underground penstock is safer on several counts. For one, the necessity of external maintenance is eliminated, and there is no danger from forest fires or snow and land slides.

There are elements decreasing the cost of the powerhouse too—less costly structural concrete for instance. And the structure is easier to maintain at near uniform underground temperatures as compared with the variable climate on the surface.

Also, underground construction can be carried out the year around with little regard for snow, ice and wind. And operating the plant when completed will be easier with almost no climatic variation underground.

DIESEL TRUCKS haul muck from powerhouse. All units have air scrubbers to remove fumes and permit use of trucks underground.

All these factors considered, an underground powerhouse-penstock system was deemed highly advisable at Kemano.

• **Powerhouse excavation**—Digging the 250,000 cu yd for the first increment of the powerhouse ranks as one of the biggest single underground excavations in construction history. Biggest overall job probably was the wartime excavation of underground oil storage tanks at Red Hill for the Pearl Harbor naval base in Hawaii (ENR Dec. 27, 1945, p. 61). This involved a group of 100-ft dia by 250-ft high cylinders that, considered together, involved a greater total excavation. But considered singly, the 700-ft long Kemano powerhouse is larger than one Red Hill tank.

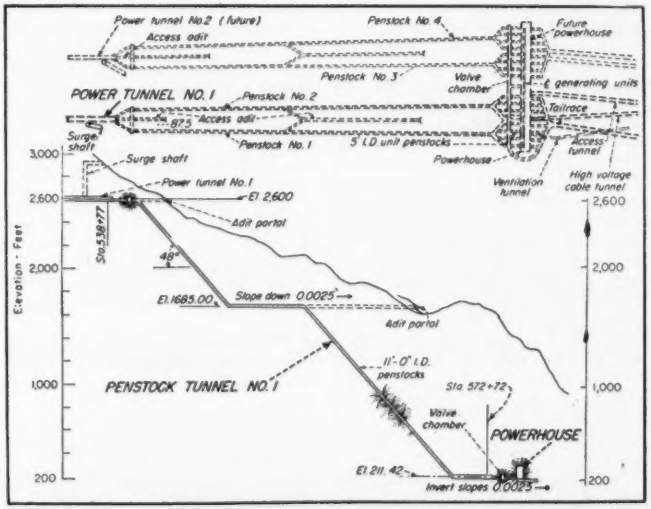
In general, the powerhouse excavation involves construction of transverse drifts, slots and raises followed by caving large quantities of rock by use of long diamond drill holes. Several distinct steps are required to accomplish this. First was the drilling of an exploratory tunnel to determine exact nature of the rock. This was done even as final designs were being made. The exploratory tunnel, 8x8 ft in size, was later used as a ventilation tunnel. Next, larger access and tailrace tunnels were drilled 1,400 ft into the mountain to the powerhouse location. Both have a 14½-ft radius arch. The access tunnel is 31½ ft high and the tail-race tunnel is 40½ ft high.

From the exploratory drift and the access tunnel, a transverse drift was dug. This 10x12-ft bore is on the powerhouse centerline at the springline of the powerhouse roof arch. It, by the way, is the only excavation now extending the full 1,140 ft ultimate powerhouse length. At 120-ft intervals, seven 10-ft wide slots were dug out to the full section of the powerhouse arch.

Meanwhile, a second transverse drift or tunnel was dug at the tailrace tunnel level. This 27x27 ft tunnel extends 700 ft. From this lower drift, vertical "raises" (5½x10 ft in plan) were dug connecting with the upper drift slots.

At this stage, diamond drills were brought into action. They drilled 141 holes 55 ft into each face of each slot. These holes are loaded several at a time full of 1¼x8 in., 60% dynamite. Biggest single blast so far has involved 76 holes that moved 3,575 cu yd of rock.

Muck from the first few blasts between each set of slots is moved to



PENSTOCK TUNNELS deep underground connect the power tunnel at El. 2,600 with the underground power plant at El. 210.

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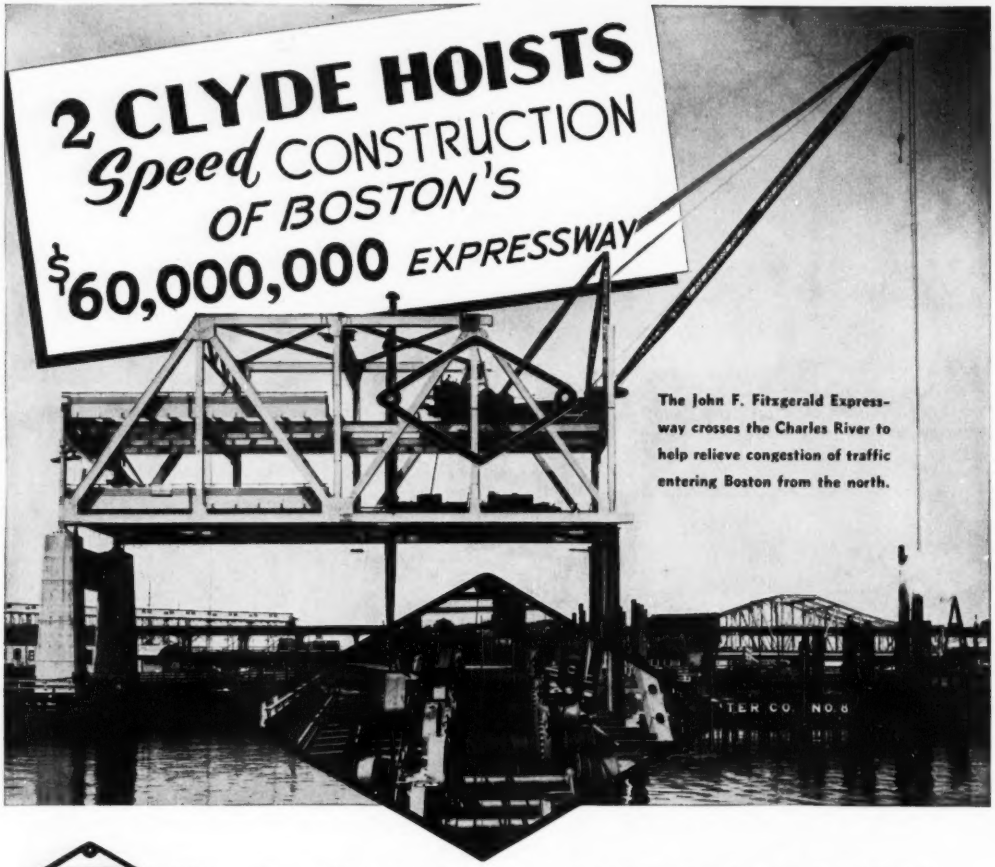

The John F. Fitzgerald Expressway crosses the Charles River to help relieve congestion of traffic entering Boston from the north.

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the raises by bulldozers. Then it is allowed to accumulate so scalers can work off the muck pile and trim loose rock off the powerhouse roof. After that, the bulldozers get to work again moving the rock to the raises where it falls to the lower level.

Electric shovels working at the bottom of the raises load diesel trucks and the material is hauled out the tailrace tunnel. Bulldozers and trucks are equipped with air scrubbers to remove harmful exhaust gases and make the equipment suitable for underground operations.

After the arch is excavated as outlined in the foregoing, it will be lined with reinforced concrete varying in thickness from massive sections at the base of the arch to a 4 to 5-ft thickness at the crown. As the lining progresses, work will start on excavation of the main body of the powerhouse. This will be done by diamond drilling vertical holes down from the arch base level. Blasting and muck removal is planned from the top down using the vertical raises to carry the muck down until the full powerhouse section is excavated.

• **Digging the penstocks**—A second major excavation operation at Kemano is digging the tunnels for the penstocks. The initial development includes two such tunnels each inclined at a 48-deg angle. This was selected as being the best for construction operations since rock would move down such a slope with no pushing necessary.

As the steel-lined penstocks are to be 11-ft dia, the penstock tunnels are being dug to about 14-ft dia. This provides clearance space outside the pipe for erection purposes and insures good concrete backing.

Partway up the incline, at El 1,685 ft, the penstocks level off or are stepped. This is to permit construction in two separate stages. It also reduces steel quantities. That's because less steel is required for a horizontal section at this level than would be needed for a similar length at the powerhouse level. Thus, the penstocks are in two parts—from the powerhouse level to the 1,685-ft level and from the 1,685-ft level to the 2,600-ft level.

First step in excavation of each part was to raise a 5x10 shaft from the bottom. Workers operated from staging attached to bull horns—1¼-in. dia looped rods anchored in the wall of the raise. This staging separates the inclined shaft into two 5x5 ft sections —the bottom one carries muck and the top is a manway providing access to the heading above. The muck chute portions are controlled at the bottom by compressed air operated gates. And the chutes are generally kept full with just enough muck removed to provide space for the next round.

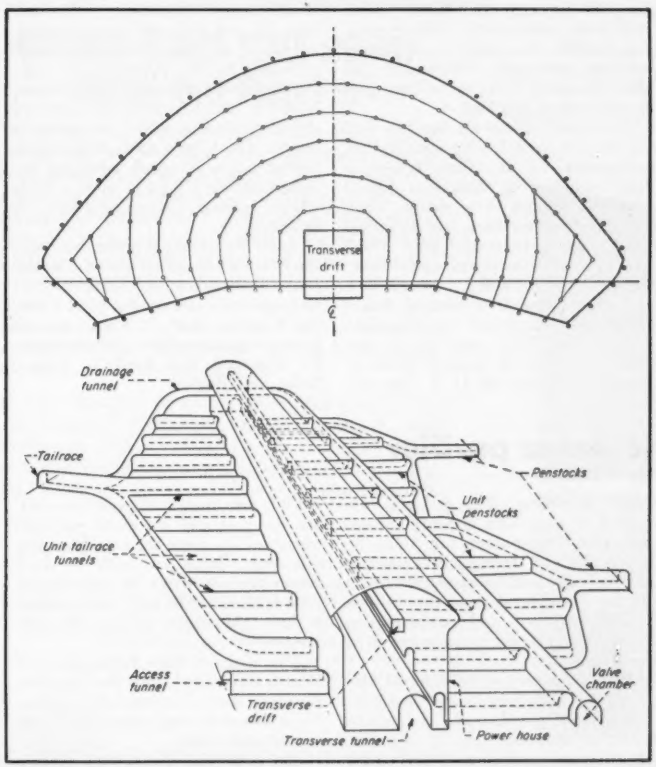
Average progress was two 7-ft rounds per day with each round developing 18 cu yd of material. With two penstock tunnels rising together, drilling and staging erection crews were alternated between headings.

After the raises are completed, work will start immediately on developing the penstock tunnels to full dimension. This will be accomplished easily by slashing down from the top, letting the material fall into the previously constructed muck chute.

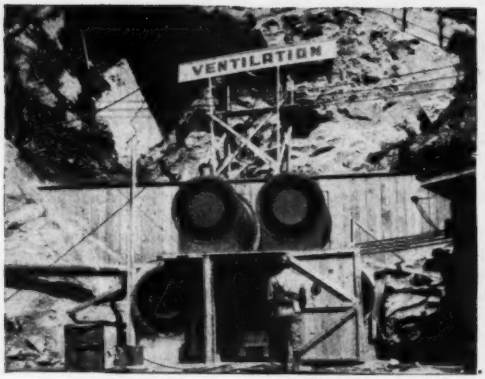
• **Power tunnel**—Perhaps the most critical excavation operation in so far as meeting the 1954 operating deadline is concerned is excavating the 10-mile long 25-ft dia power tunnel. This connects the powerhouse-penstock assembly at Kemano Valley with the intake Tahtsa Lake—the westernmost part of the 20-million acre-ft reservoir. This work is being carried out on four headings—one at Kemano Valley on the 2,600-ft level, two from a near midway adit and the fourth from the east end.

To encourage the workmen to maintain a good rate of progress, bonus payments are used. If more than 27 ft per day average advance is maintained over a week's time, then the bonus is paid all workers at that particular heading. The 27-ft average is for unlined tunnel. A lower average is established for the bonus base where rock conditions are bad enough to require support.

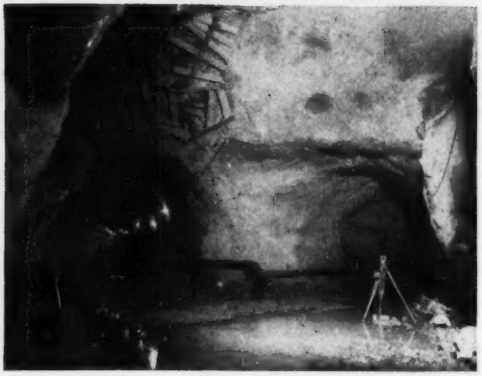
Progress at the east end of the power tunnel has been slightly slower than at other headings because the weak rock calls for more support than at other headings—and more than anticipated. Studies have been made of alternate plans that would speed the pace of this time-critical work. One plan would have substituted two smaller tunnels of equivalent hydraulic characteristics. The other plan would reduce the size and include continuous concrete lining, thus improving



PERSPECTIVE DRAWING of the underground powerhouse, penstock and tailrace tunnels showing location of transverse drift and transverse tunnel from which the rock excavation work for the powerhouse was started. At the top is the drill pattern for the powerhouse roof. As many as 76 holes 110 ft long were blasted at one time.



VENTILATION TUNNEL was originally an exploratory drift. It now is equipped with large power-driven fans to exhaust blast fumes and dust from the powerhouse excavation.



JUNCTION POINT in the penstock tunnels. Roof bolting (upper left) is being used extensively in this work. Steel penstocks are to be built in these tunnels and backed with concrete.

hydraulic efficiency. The latter has been adopted and it is likely that it will be used for the second 10-mile tunnel required for the ultimate development.

In addition to the rock excavation required for the powerhouse, penstock tunnels and the power tunnel, a large amount of rock work is needed for the eight unit penstock tunnels (9-ft dia), eight unit tailraces (14-ft arch dia), a valve chamber tunnel (37-ft high and 20-ft wide) and a powerhouse bypass tunnel (27x27 ft). And work is progressing on all almost simultaneously. Later a surge shaft will be dug from the end of the power tunnel some 270 ft up into the mountain. A horizontal adit will connect the surge shaft with open air to provide relief to dampen surge waves and protect against the enormous build-up of pressure waves that can occur in a long closed hydraulic system.

• **Carbide bits**—Much credit for making such a herculean underground excavation job possible is given by the owner and contractor to the relatively recent development of drill bits with tungsten carbide steel inserts. Such drill steel makes faster drilling progress possible, thus making a tight time schedule practicable. The inserts also show favorable costs on a large production job of this kind.

Two types of carbide bits are used on the job—each having specific drill equipment for it. One type—now fairly standard in American tunnel practice—includes a screw-on, cross bit. At Kemano these are furnished by Canadian Ingersoll-Rand. These bits can be resharpened many times before being discarded.

A second type is of Swedish manufacture as furnished by Canadian Copco, Ltd. This type has become fairly common in mining work in both Canada and the U. S. The carbide inserts are set in a chisel bit in drill steel of varying length. This steel can be resharpened many times.

Generally, these drill small holes—down to ⅞-in. dia—and very light drill steel is used. When the bit wears out, both bit and drill steel are discarded.

Use of the two types vary largely according to the preference of individual tunnel foremen. In general, however, the I-R drills are used on the large jumbos where the going is heavy. The Copco drills being much lighter and working off a jack-leg, are more commonly used in smaller drifts where greater maneuverability is desirable.

A. O. Strandberg is project manager for Morrison-Knudsen Co of Canada, prime contractor at Kemano. All underground excavation work is under the direction of R. E. Davis, general tunnel superintendent. Subcontractor for diamond drill work is Boyles, Selby and Boyles.

Army unveils electric water purifier

The Army's new truck-mounted electrical water purifier unit, which is capable of treating, clarifying, filtering, purifying and distributing 2,400 gph in temperatures as low as —40F, was demonstrated before defense and city officials at Richmond, Va., recently.

The unit, which can be transported easily on a cargo-type plane to combat zones, contains several inventions and numerous developments resulting from years of basic and applied research at the Engineer Research and Development Laboratories, Fort Belvoir, Va.

Heart of the unit is an ultra-high rate solids contact water conditioner called an erdlator. This device is connected in series with diatomite filters, and the combination not only removes silt and destroys bacteria, but also provides positive physical barriers to the passage of organisms which cause dysentery and schistomiasis, serious water borne disease found in the Far East.

Polluted water can be pumped into the unit and chemically and physically treated and discharged as potable water in approximately 20 minutes. Its excellent performance and short detention time is attributed to the use of a material which is almost universally available and costs less than $12 a ton.

Only one man is required to operate the unit and it can be put into operation by three men in less than 90 min. Equipped with its own power source, it can be operated in total blackout. The only noise audible is from the engine driving the generator.

The Virginia State Department of Health cooperated with the Engineer Research and Development Laboratories in conducting engineering tests of the equipment.

The unit was also tested at Emporia, Portsmouth, Newport News, and Williamsburg. Water in each of these locations presents unique purification problems.

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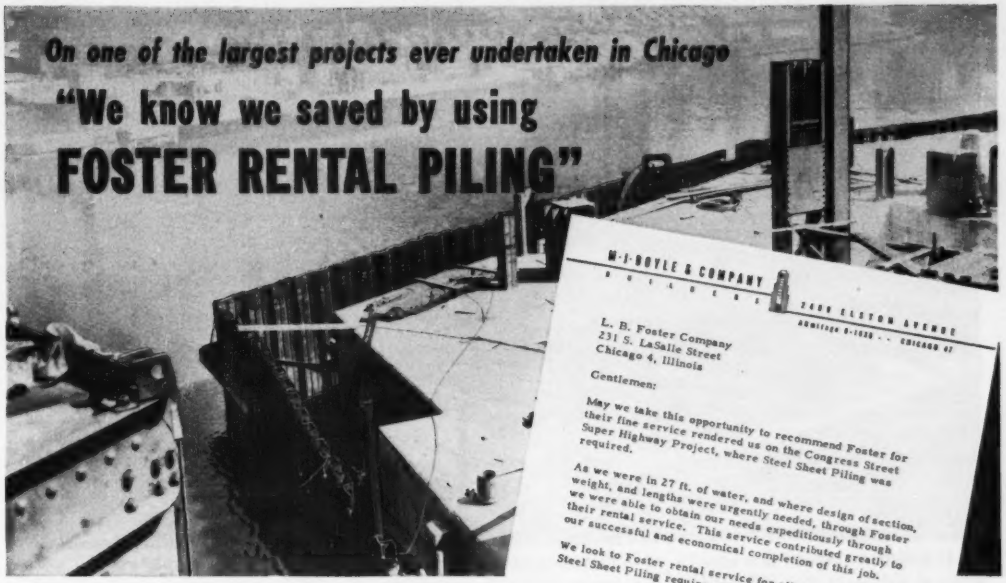

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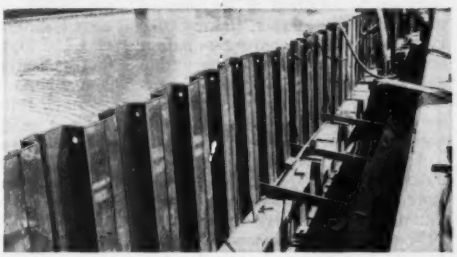

TOP: Foster Steel Sheet Piling used in the construction of the reinforced concrete bridge pier located on the west bank of the Chicago River.

RIGHT: Accurate driving was made possible with top quality steel-sheet piling (in the proper lengths and sections) —an exacting job kept seepage to a minimum.

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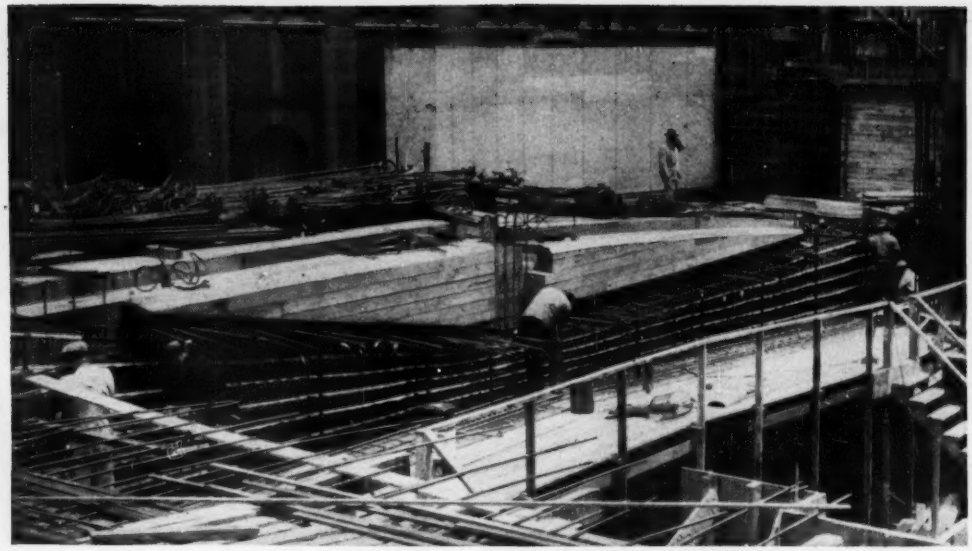


PRESTRESSING CABLES were placed in forms for prestressed concrete girders in San Francisco parking garage. Girder supports column at mid-span. Cables, sheathed in paper to prevent bond with concrete, were tensioned after concrete set.

Prestressed girders support garage floor

HEAVIEST PRESTRESSED concrete girders in U.S. construction history are incorporated in a San Francisco parking garage that was opened early in November. Biggest beam is 62 ft long, 4 ft wide and 7 ft 8 in. deep, with an 8-ft wide T-flange. Another unusual type of member is a two-span, continuous 50-ft long prestressed girder.

The big beams span a ground-floor area that provides needed maneuvering room for cars entering and leaving. Except for the continuous girder, the prestressed units support upper floor columns near mid-span. In each span, the continuous girder supports an end of one of the other big prestressed members. Restriction upon structural steel led to adoption of the unusual members. The owner, Barrett Garages, Inc., and the contractor—Barrett and Hilp—have overlapping ownership and were willing to undertake this relatively new type of building member for the benefits gained from construction experience.

And further, preliminary estimates indicated a cost saving. An approximate analysis of actual costs showed the prestressed girders to be about 20% cheaper than comparable steel girders. The garage was completed at least a year sooner than would have been possible with steel allocation delays, the builders say.

• **Spiral ramp design**—The 500-car garage cuts through a city block with frontage on Post and Sutter streets. Greater frontage on the latter meant a staggered column arrangement at the middle of the building.

Main auto entrance to the garage is from an alley—Lick Place. A spiral ramp just off the entryway serves the three upper floors (three more are to be added at some future date).

Design was complicated because the entryway, column offset and spiral ramp are all situated in the same general area. And in the same location one row of upper floor columns had to be omitted at ground floor level to provide needed maneuvering room.

Three of the upper floor columns are supported at near mid-span by prestressed girders. Each of the two biggest girders supports a total load of 1,430 kips, with 940 kips of this the concentrated load of the upper floor column.

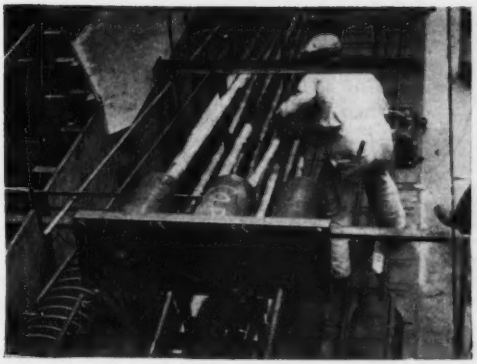
The 62-ft long unit includes twenty-eight 1¼ in. dia bridge strands. Each of these strands has a cross-sectional area of 1.36 sq in. and an allowable tensioning load of 170,000 lb—or 125,000 psi. They were greased and wrapped with heavy building paper to prevent bond with the concrete. Threaded swaged fittings on the ends enabled the strands to be anchored at the girder ends after tensioning, by simply tightening a nut.

Precautions taken to prevent bond proved successful. During the prestressing, there was no evidence of friction losses.

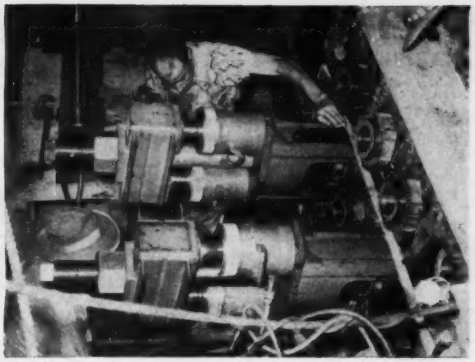
• **Different cable stress**—The first cable stressed in the big girders was tensioned the full 170,000 lb allowable. But the last cable was given only a 162,500-lb pull because a ⅜-in. elastic shortening of the beam was expected. This shortening occurred gradually as the cables were stressed, so that by the time the full ⅜-in. deformation had taken place, the first cable stressed was expected to have a tension of only 162,500 lb.

The big girder was designed to have zero compression stress in the upper fiber after being stressed with the dead load of the first 3-story building increment on it. Since the arrangement of the cables may have induced tension cracks in the upper fibers of the beam with no load, the girder was stressed with the full 3-story dead load. That also gave the girder concrete ample time to cure to well beyond its specified 5,500-psi 28-day strength.

But it also developed corollary problems. The designers anticipated both a lateral shortening and a center upward deflection of the beam. Such movement, even though slight, would induce severe stresses in concrete columns and consequent cracking. To prevent this, columns in the floor just above and below all the prestressed members were not poured until after stressing operations. Tempo-



CABLES ARE WRAPPED in heavy paper after being grease-coated. This prevents bond between concrete and cable. (All ENR photos)



TWO HYDRAULIC JACK ASSEMBLIES prestress cables in the heavy girder. Each assembly includes two 60-ton jacks. Strands were anchored by tightening nuts on end fittings.

rary pipe columns were substituted. These were left in place and the concrete cast around them.

• **Continuous girder**—According to the designers, the continuous girder spanning two 25-ft column bays could have been designed in regular reinforced concrete. But the shear induced by the load of the prestressed girders supported by the continuous girder would have been high. By prestressing the continuous girder, the main tensile stress was reduced from 417 psi to 221 psi.

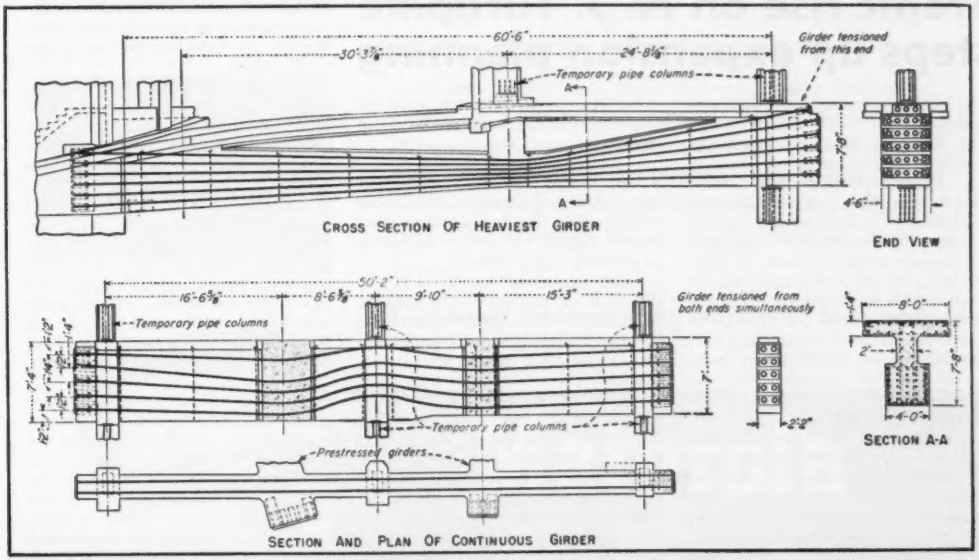
The girder could also have been designed as two simple prestressed beams. But the connection at the mid-column would have been very difficult; so continuous design was used.

Only eight 1½-in. dia cables were required in design but ten were used to simplify arrangement at the intersections of the continuous with the regular prestressed girders.

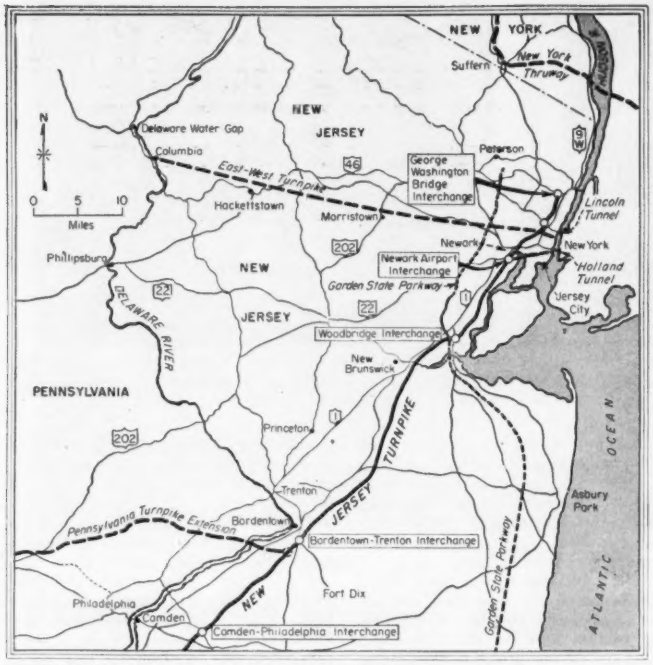
The cables are curved down under the beams to be supported and up over the middle column. To minimize friction between the cables and concrete during stressing operations, the cables were pulled from both ends of the continuous beam instead of from one end, as in the other beams. But, actual stressing operations indicated that both the plastic covering and the heavy building paper used in protecting the grease coating were effective in preventing bond between cables and concrete.

• **Credits**—The building was designed by Ellison and King, consulting structural engineers. The late S. C. King was in direct charge of the design. Working with him was T. Y. Lin, associate professor of civil engineering, University of California. J. K. Rode supervised the construction for the engineers. John A. Roebling's Sons Co. supplied cables and jacking assemblies and furnished technical advice.

The garage was built by Barrett and Hilp, San Francisco general contractors, for Barrett Garages, Inc.



HEAVY PRESTRESSED GIRDER has 28 high tensile cables, each 1½-in. dia. Cables in the continuous girder bend up over the supporting column and down under the concentrated load. Two prestressed girders frame into the continuous girder.



EXTENSIONS OF THE NEW JERSEY TURNPIKE now planned or under study include a connection with the Pennsylvania Turnpike near Bordentown, a connection to the Holland Tunnel in Jersey City, and a link to the New York State Thruway at some point yet to be determined. Also under study is an East-West toll highway across the state.

Traffic rise on N. J. Turnpike steps up expansion planning

THE EXPECTED SLUMP in activities at headquarters of the New Jersey Turnpike Authority as the turnpike approached completion is not developing. Instead, the staff that recently moved into the new headquarters building at New Brunswick is working at high tempo on plans for expanding the capacity of the turnpike to meet the demands of traffic that will be nearly double the engineers' estimated volume by the end of the first year of operation. Plans for extending the turnpike also are rapidly taking form.

The 118-mile turnpike was put into service for its entire length in January of this year. Almost immediately the traffic count soared far above predictions. On the first holiday weekend congestion developed at some of the toll gates although they had been laid out to accommodate from 100 to 600 percent more vehicles than the traffic studies indicated would pass through any one entrance or exit.

As a result, the Turnpike Authority began at once to add more lanes and toll booths at seven of the 17 interchanges.

• New financing facilitated—Since then, traffic and income have climbed steadily. For the first seven months, income topped $10 million as against an estimate of $5½ million.

That spectacular rise has had two effects: It has pointed to the need for additional traffic lanes between the Camden-Philadelphia interchange and the Woodbridge interchange and to the probability that more lanes must be added between the Lincoln Tunnel interchange and the George Washington Bridge interchange. At present there are six lanes between Woodbridge and the Lincoln Tunnel.

The rise in income also has greatly simplified the problem of financing the needed lane construction as well as other projects now on the active list. Bondholders, seeing how far current income is above operating and financing needs, are in a receptive mood.

• Projected work—Now on the list of projects for which legislative approval has been obtained, in addition to the new traffic lanes, are the following:

(1) A connection to the Pennsylvania Turnpike, roughly 40 miles long, including a new bridge over the Delaware River. New Jersey's share of the work—most of which will be in Pennsylvania—is estimated to cost $27 million. The Pennsylvania Turnpike Commission has just sold $65 million in bonds to finance the cost of construction to the Delaware River and expects to have construction under way soon.

(2) A connection to the New York State Thruway, about 19 miles long, of which New Jersey's share is estimated to cost between $50 and $75 million, depending on the location.

(3) A more direct connection to Jersey City and the Holland Tunnel. This would be about eight miles long and made up largely of a high-level bridge over the upper end of Newark Bay. The cost is estimated at $98 million. Such a connection was considered in the initial planning for the turnpike but was excluded because its high cost did not appear justified on the basis of the traffic estimates of that time.

(4) A new cross-state toll highway starting at a point south of the Lincoln Tunnel, where it would connect with a proposed new tunnel under the Hudson River, and extending west to the Delaware River, probably near Columbia, a distance of 55 or 60 miles. This highway is estimated to cost about $300 million.

Running this east-west highway to Phillipsburg on the Delaware was proposed as an alternative in the legislation authorizing its construction. However, selection of Phillipsburg as a western terminal appears improbable as a new highway along that route would drain off part of the traffic that now is expected to be obtained from the proposed connection to the eastern end of the Pennsylvania Turnpike. For lack of the connection, a considerable amount of traffic now leaves the Pennsylvania Turnpike at Harrisburg and enters New Jersey at Phillipsburg.

• Financing plans approved—Two proposals for financing both the current work and the extensions that now are under consideration were approved recently by more than two-thirds of the holders of bonds issued in 1950 and 1951 to finance the orignal turnpike construction. The first of these was a proposal to add $28 million in bonds to the $255 million issued in 1950 and 1951 to finance the initial project,

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ION EXCHANGE AND WATER CONDITIONING HEADQUARTERS

thus bringing the total cost to $283 million.

This $28 million is required to complete payments on the original construction contracts, to pay for the added toll-collecting facilities at seven interchanges and for expansion of the service areas made necessary by the increased traffic, to buy more operating and maintenance equipment, and to cover the cost of a higher grade of surfacing on the shoulders of much of the highway, which experience has shown to be necessary.

As part of the same action, the bondholders also approved the issue of bonds that must be sold to finance the proposed additional traffic lanes now found to be necessary.

Financing the connections to the Pennsylvania Turnpike and New York Thruway presents no problem, as bonds may be issued when traffic consultants certify that there is sufficient traffic to justify the construction of either project.

The Turnpike Authority's consultants already have certified that the Penn Turnpike connection will add $2.5 million to the authority's gross income during the first year of operation, which is adequate for financing purposes.

•New bond series sanctioned—Bondholders also have approved issue of "Second Series Bonds" to finance future projects such as the Holland Tunnel connection and new cross-state toll highway, when traffic studies demonstrate that those facilities will produce sufficient income to warrant construction.

• Adding traffic lanes—First priority on the program of new work has been given to construction of additional traffic lanes between Camden and Woodbridge, a distance of 57 miles. The present rate of traffic growth indicates clearly that these lanes will be needed as far as Bordentown as soon as the link to the Pennsylvania Turnpike is opened, also that more lanes will be needed south of Bordentown in the near future.

Preliminary engineering work for these new lanes already has been started by the authority's consulting engineers.

Whether lanes will be added between the Lincoln Tunnel and George Washington Bridge interchanges will depend on what agency of the state builds north to the state line to connect with the New York Thruway. Within recent weeks the New Jersey Highway Authority, the agency set up to complete the Garden State Parkway (ENR Sept. 18, p. 28), received permission to extend its parkway northward for that purpose. If traffic studies indicate that such a parkway extension would skim off a large part of the private automobile traffic which otherwise could be expected to use an extension of the turnpike, six lanes would not be needed north of the Lincoln Tunnel.

• Paving for new lanes—Asphaltic concrete paving is to be used on the new lanes between Woodbridge and Camden, similar to that on the existing lanes. No significant changes are to be made in the specifications used for the initial turnpike work, although those specifications have been criticized by some asphalt-paving specialists. They called for 4½ in. of bituminous concrete (put down in three layers) on 7½ in. of penetration macadam on a 6½ in. gravel or stone subbase.

Criticism has been directed against the surfacing because the specifications called for only 5½ percent of asphalt oil, which was low in the opinion of some authorities. That was not done as an economy measure but because Charles M. Noble, chief engineer for the authority, concluded from experience in the New Jersey State Highway Department that with the design mix and available materials, under the volume and weight of traffic anticipated for the turnpike, any higher percentage of asphalt oil would result in flushing of asphalt to the surface, with a consequent reduction in surface friction. Even with the 5½ percent, some flushing occurs. This is remedied immediately by the addition of a top dressing of stone grits rolled in. As this condition developed at only one location, the flushing may have been due to the mix used there or to plant difficulty, in Mr. Noble's opinion.

Reports that as much as six miles of the pavement already has had to be replaced are unfounded. During construction, 1,500 ft of top course on one two-lane roadway was replaced due to soft asphalt having been incorporated in the mix caused by an error at the bulk plant. There have been no other replacements due to pavement deficiencies.

There has, however, been some patching due to settlements in fills and to surface irregularities. In most instances these irregularities were the outcome of delays in getting steel for bridges and overpasses. Because most of those structures were not completed before paving began, gaps had to be left in the paving where main highways still crossed at grade.

Filling in these short gaps at a later date was difficult to do satisfactorily. Also, fill placed back of bridge abutments frequently was not as well compacted as the approach fills, resulting in settlement and subsequent patching of the pavement to get better riding conditions.

• Additional safety measures—The rapid rise in traffic volume that followed opening of the turnpike coupled with a few fatal accidents in the early days that obviously were the result of excessive speed has caused the Turnpike Authority to expand the police force far beyond that originally planned. An initial police force of 38 has now been expanded to 50, with 12 more furnished by the state police on weekends and holidays. Present indications are that these 12 will soon be added to the permanent force.

Electronic devices are being used to check the speed of vehicles, not for the purpose of catching speeders but to determine what percent of the drivers are exceeding the 60-mph limit as a check on the enforcement program.

Late in October the Turnpike Authority notified all bus companies operating over the turnpike that the radar checks indicated that a majority of their buses were operating at speeds above the 60-mph limit. Bus companies were told by Paul L. Troast, chairman of the Turnpike Authority, that unless prompt action was taken to stop such violations, violators might be banned from the turnpike.

When set over against state and national averages, the accident record for the New Jersey Turnpike is better than either. For the first 8 months there were 88.6 accidents per 100 million vehicle miles as against 418 for New Jersey as a whole in 1951, the latest figure available.

The fatal accident record for the first six months of operation was 4.1 per 100 million vehicle-miles as against a state-wide figure of 4.4 for 1951 and a national figure of 7.7. (State and national figures for 1952 are not yet available.)

But that record was spoiled by two accidents during the early morning of July 4 in which seven people were killed. That raised the rate for the first eight months of 1952 to 5.2.

On the Pennsylvania Turnpike the fatality rate for the first eight months of this year was 6.8. It was 8.5 for the entire year 1951.

• Traffic predictions—Prior to opening the turnpike, estimates of potential traffic indicated that the average number of vehicles using the turnpike each day would be 23,000. Up to the end of September, the average daily traffic was 48,900 vehicles. In the light of this traffic, the turnpike staff now estimate that the total number of vehicles using the highway in 1952 will be close to 18,000,000. That would be about equal to the volume predicted for 1965 in the original estimates.

TWO-MAN TEAMS push and grunt in unison to lower concrete-incased water line into Boston's Charles River. Lowering progressed at rate of 1 ft/hr on 300-ft run which extended out to mid-river. Second half was lowered similarly to complete the water crossing.

WIRE ROPE SLINGS support 64-in. pipe (here incased in lower half of concrete pour) and each one joins a triangular plate hung from clevis at bottom of a threaded rod. Job-made wrenches turn bearing nuts which control lowering to trench 30 ft below water level.

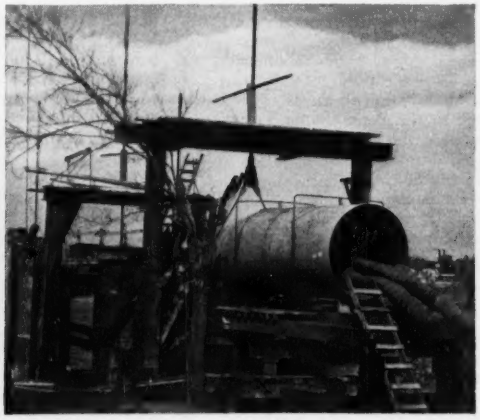
Water main tests contractor's ingenuity

LAST MONTH the curtain went down on the final act of a construction drama that had run for fifteen months and had taxed the ingenuity and resourcefulness of the contractor throughout the entire engagement.

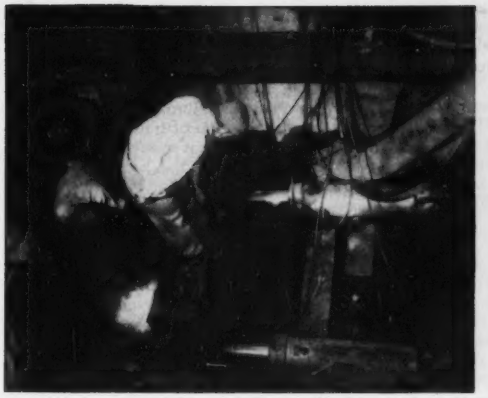
The theater of operations was at the Charles River, boundary between Boston and Cambridge, Mass., and principal characters were engineers of Merritt-Chapman & Scott Corp. Stars of the show were: (1) a new method of lowering the concrete-incased pipe to the river bottom on threaded rods, and (2) pushing a 150-ft length of 7-ft-dia pipe under 14 parallel railroad tracks.

The job called for installation of a 56-in. i.d. concrete-lined water supply main to replace two 36-in. mains carrying water from Cambridge to Boston. The projected line would go through a 150-ft field, into a 600-ft trench cut into the river bottom, under a 90-ft wide highway—one of Boston's busiest—150 ft under 14 parallel mainline tracks of the N. Y. Central, N. Y., New Haven and Hartford, and Boston & Albany railroads—and finally 110 ft to its end.

THIRTEEN RODS remain of original 27 after pipe is submerged and buoyancy lessens dead weight. Charles Richardson, MC&S project manager, (foreground) synchronizes shouts with his super for simultaneous lowering on all suspensions.



RISING UP from Boston side of Charles River, end of second 300-ft drop enters trench on west side of 90-ft highway, which contractor crossed in three weeks by employing cut-and-cover method.



STANDING ATOP steel push-frame, Jesse Comer, job superintendent, watches two 300-ton hydraulic jack plungers while welder tacks frame to 7-ft-dia steel casing.

OAK WEDGE prevents pipe from lifting up as it enters tunnel. Here super checks slow-but-steady travel by watching time and movement of inch markings.

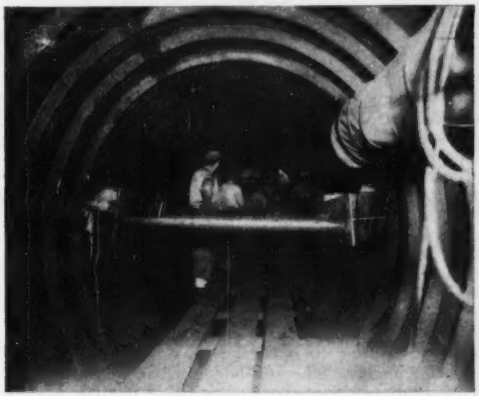
No derrick boats—After camp was set on the Cambridge side the first 150-ft run was quickly installed by cut and cover, bringing the pipe up to the west bank of the Charles. Had Merritt-Chapman & Scott Corp. been able to bring its huge floating derricks up river, the water crossing would have been a comparatively simple matter: Lowering even a 300-ft length of the incased pipe would have been an easy job for the seagoing giants. But low-lying bridges denied the rigs access to the job, and the contractor devised the bolt-lowering method.

Act one: The river—A trench was dredged across the river. Starting at the Cambridge end, a double line of steel H piles was driven out to mid-stream, one row on either side of the trench. The piles were driven on 8-ft centers near shore, and on 12-ft spacings in the river. Capping each pair, 17 ft above water level, was a horizontal H-beam to complete a series of inverted U's. Then one timber working platform was run out between the uprights to midstream, three feet above the water, and a second platform above it, atop the pile bents.

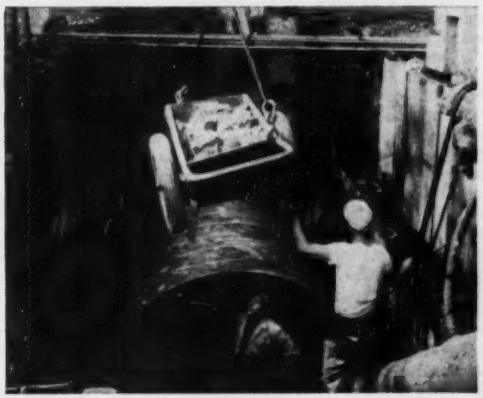
One by one, 34-ft sections of pipe were skidded out along the lower platform, placed on 10x10's and welded end-to-end. A 50-ft section nearest land rose up at a 45-deg angle to enter a trench ashore. Both ends were sealed with water-tight bulkheads for buoyancy later.

Next, at each of the 27 pile bents a wire rope carrying sling was passed under the pipe; connected to a triangular plate which engaged a clevis at the bottom of a threaded rod. These rods were the secret of the lowering operation. In all, there were 27, alternately 12 and 14 ft long, and 2¼ in. in diameter. Each passed up through its bent cap and engaged a 6-in. bearing nut. T-shaped wrenches were fabricated—one for each nut—for lifting and lowering. Wrench arms were of hollow pipe, with two solid steel shafts in each that could be extended to increase the turning radius and provide more leverage whenever necessary.

With bolts and slings in place, a web of reinforcing steel was placed around the pipe and enclosed within the lower half of an octagonal concrete form. A barge-mounted crane swung 130 yd of concrete from shore and deposited it into buggies on the upper deck for chuting down into the forms. The first pour into the 300-ft-long form brought the top of concrete above the "springline" of the pipe—just high enough to cling to the pipe and not fall away.



ARCH RIBS AND STEEL SPREADERS prevent distortion by ever-increasing side pressure. Crossbars are high enough over timber walkway to allow passage of buggy for mucking operations.



WORKMAN PREVENTS SWING of buggy as it is lifted from tube. Note horizontal piece of steel sheetpiling temporarily supporting pipe for railroad switch and signal controls.

To minimize the strain on lowering rods, the partially-encased pipe was jacked up a few inches, as soon as the concrete had set; then the lower platform was dismantled and partly-incased pipe lowered into the water until buoyancy supported about ⅓ of its weight (then estimated at 350 tons). With the pipe thus awash, 120 yd of concrete was poured into a newly built form for the top half of the casing.

Ready for lowering—Then came the lowering operation. Two men manned each of the 27 wrenches and, at each shouted signal, took two complete turns. Thread pitch was 4½/inch and lowering progressed at the rate of 1 ft/hr. As the pipe sank in the water, buoyancy increased, supporting half the entire weight. The thirteen 12-ft rods passed through their bearing nuts, leaving the pipe suspended on 14 alternate 14-footers.

Half as many—twice as long—As prearranged, threaded couplings were placed on the top of the 12-footers, now exposed below their bearing nuts. Extension rods, 24 ft long, were screwed down through these empty bearing nuts and into the top half of each threaded coupling. After drilling and bolting these sleeves in place, lowering was continued on the butted rods (now with a total length of 36 ft) until the alternate 14-footers passed through their bearing nuts and were disconnected. Lowering to trench bottom was then completed on the 36-footers without incident.

With the Cambridge half of the pipe secure, bents were removed and transferred across river, with the exception of three nearest midstream. These remained in place with their 36-ft bolts for final adjustment when the second half was completed and tied in by divers. Final job was to backfill the trench.

Act two: The highway—Next difficult step was to cross the highway with its tremendous commuter traffic in and out of Boston. After considerable discussion with all concerned, the contractor decided to cross the 90-ft gap with cut-and-cover method. Jacking under the highway was impracticable since deep cuts had to be made on either side anyway; the first to accommodate the rising end of the water crossing and the second for a jacking pit for tunneling under the railroad. By carefully timing the work, the highway crossing was completed in two sections, in less than three weeks, with a minimum of traffic interference.

Act three: The railroad—The troublesome stages of the job weren't yet over. Final phase was to jack a 150-ft length of 7-ft-dia pipe casing under 14 parallel railroad tracks with no interruption of service. The sheetpile cofferdam used to brace the highway-crossing ditch was extended to within five feet of the first track. Two 300-ton hydraulic jacks were cradled in a horizontal position, 7 ft apart, and tied back to timber blocks and vertical H piles backed up by batter piles for resistance to pushing.

Push it in, clean it out—The first 10-ft section was fitted with a front rim plate, tapering back from a sharp cutting edge to 1-in. thickness. A push frame, 8 ft square, was made up from H-beams and set between the plungers and the rear of the pipe section. Plungers traveled their full 48 in., at which point they were retracted and the space filled with timber filler pads. A second push then drove the pipe to the halfway mark and cleanout crews mucked dirt out of the pipe into buggies which were lifted to the surface by a crane. Later, with more filler blocks and more pushing, the entire 10-ft section was nosed in under the first track.

As additional sections were welded on and subsequent pushing drove the pipe under more tracks, a timber walkway was placed in the tube, temporary lights were strung and a portable heater set up to provide fresh air through its blower and 12-in.-dia canvas tubing.

At the halfway mark, progress was such that a new 10-ft section was added every 24 hr. The ⅜-in. thick casing was pushed 5 ft horizontally at 10 am; mucking out continued until 3 or 3:30 pm and the final half jacked at that time. As jacking progressed and resistance increased, the flanges of the H-beam push-frame curled under increased pressure. A new one was made, reinforced with 1-in. plate, to finish the job.

Side-pressure bugaboo—Also at this halfway mark side pressure deformed the pipe into an elliptical shape which was countered by jacking and welding of angles to the inside circumference, fabricated to the 3¼-ft radius. Pressure increased, however, deforming the pipe again and this time it was jacked into round and held with longitudinal box beams and steel-pipe spreaders—just high enough to allow the mucking buggy to pass under them. Then work progressed as usual.

Two-day job in 14 hours—Just 30 ft short of their mark the jacking pumps reached their 600-ton combined push and would move the pipe no further. Permission was granted to MC&S to take out the farthest two tracks and finish the job by cut and cover on the weekend before Labor Day. The contractor set to work at 6 pm on Friday night and had the last three 10-ft sections in place and the tracks replaced before 8 am Saturday; hence there was no interruption of traffic.

Final step was insertion of a 64-in.-dia pipe inside the larger casing and concentric spotting with steel spacers. Ends were plugged and the 10-in. space between inner and outer tubes filled with grout. A crane swung the grout in from the street and dropped it into funnels which led into 8-in.-dia drop pipes on 16-ft centers. These had been drilled up from below just prior to placement of the inner tube and emerged between the many sets of tracks at ground level. Spacers between the pipes not only kept the bottom of the inner pipe at proper height for concentricity, but others on top prevented the grout from floating it up against the top of the larger casing.

Anti-climax—The contractor cut-and-covered the final 110 ft of pipe in 10 days in routine fashion, reaching the end of the 1,100-ft line. Following placement of each section of line, other crews gunited the interior of the entire length.

Charles A. Richardson of Merritt-Chapman & Scott's Boston office was project manager of the pipeline job (along with several other jobs in the Boston area). Jesse Comer was superintendent, with Stewart Associates, Cambridge, Mass., as consulting engineers. A. L. Guild served as resident engineer. Harold J. Toole, Director and Chief Engineer of the Metropolitan District Commission's Water Division was in overall charge of the project, with C. O. Clark representing him in the field.

USGS issues reports on industrial water

A revision of the report, "The Industrial Utility of Public Water Supplies in the United States, 1932" is in process by the U. S. Geological Survey. Three of an eventual nine preliminary reports have been published recently.

Primary concern of these reports is to furnish information on quality of water in the larger cities of each state. Data include: ownership, population supplied, sources, treatment, capacity, and chemical analysis.

The survey recalls a 1950 estimate of over 75 billion gallons per day taken by industry from private sources. Another six billion gallons per day was estimated as furnished through public water supplies. The survey expects more new industries—especially smaller ones—to use public water systems.

FOUNDATION for the Georgia Ports Authority wharf required 1,971 precast piles.

FRAMING for the transit sheds is of steel with corrugated metal side walls.

COMPLETED facilities will look like this when the Savannah State Docks are opened.

$6 million Georgia docks opened

The $6 million new Savannah State Docks of the Georgia Ports Authority —scheduled for dedication Nov. 11, will give Georgia one of the most modern and efficient docking and cargo-handling facilities in the world (ENR May 22, page 63.)

The new Savannah facilities consist of five shipping berths, one of which is the $60,000-oil dock leased to the Southland Oil Corporation; three modern transit sheds; five miles of new railroad tracks to the docks; additional roadways and truck ramps. The authority's property already has eight miles of railroad track and an extensive network of roads.

Started in January, 1951, construction of the wharf and transit sheds has been somewhat hampered by delay in obtaining materials. Port officials expect, however, that the facilities will

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be completed and put into full-scale operation early in 1953.

• **Details of facilities**—The new facilities include a concrete deck 80 ft wide and 2,047 ft long along the channel of the Savannah River. This marginal wharf will provide berthing space for four vessels of the Liberty class. (The Southland oil dock is a separate structure and not included.) The four berths are served by three transit sheds, arranged so that the docks can be operated as three berths of about 630 ft in length each. This will accommodate any of the larger type of cargo carriers now projected or anticipated in the next few years.

The wharf is supported on precast concrete piles in front of a steel sheet-pile bulkhead. Forty-six feet of the deck serves as an apron in front of two of the transit sheds with 35 ft being utilized for the same purpose in front of the third shed.

Two ship-side tracks will be built on the 46-ft apron and one track on the 35 ft apron. The apron's design provides for future installation of gantry cranes in front of the first two transit sheds.

• **Transit sheds**—The transit sheds have a nominal width of 165 ft, with the front portion resting on the concrete deck and the remainder on the solid fill behind the bulkhead. Two of the sheds are 450 ft long and provide about 74,000 sq ft of covered transit storage space. The third shed, with a length of 360 ft, will have 59,000 sq ft of space. The sheds will have concrete floors throughout, skylights and roof ventilators, and will be equipped with lighting for night operation. The buildings also will be protected by automatic sprinkler and fire alarm systems.

Roofs are precast light-weight concrete slabs with a tar and gravel built-up surface. Side-wall construction consists of corrugated metal on steel framing, except the lower five feet which is reinforced concrete.

At the rear of the transit sheds is a 12-ft wide platform, covered by a canopy, with the platform located at car floor height and served by two tracks. Back of the depressed tracks is located the main service road.

Truck loading docks are provided at each end of the first two transit sheds and at the south end of the third transit shed. Since spacing between transit sheds is about 180 ft, there is adequate space available to provide the loading platforms and allow some 55 ft between each platform and the central drive for truck

parking. This will allow from 20 to 40 trailer trucks to be served simultaneously at the docks.

Provision has also been made to permit trucks to enter any of the transit sheds at the ends. Transit shed doors for truck entrances and on the ship apron side of the structure are steel rolling doors 20 ft wide by 14 ft in height. Doors on the ship side are about 45 ft on centers.

According to Harry Robert, Jr., special projects engineer of Robert and Co., the designers of the facilities, "The layout and arrangement of the transit sheds for rail and truck services are similar to recommendations which grew out of studies by the Maritime Commission a number of years ago and current recommendations in the Engineering Manual of the U. S. Engineers."

• **Interrelated**—The docks have been designed primarily as a system of interrelated services—berthing, loading and unloading facilities, open and covered storage for various type of commodities, rail and highway facilities, the leasing of industrial areas, cold storage and other facilities incidental to trade in the port.

The port site, located on the Savannah River about 4 mi from the center of Savannah, already had 2,000,000 sq ft of warehouse space with paved floors and automatic sprinkler system when purchased from the federal government in 1948 for $808,100. Today, with the new facilities and improvements, the port property is estimated at more than $15 million.

The recently modernized warehouses give the new docks some of the most extensive back-up facilities to be found in any Gulf or South Atlantic port. Operation of the warehouses has enabled the Georgia Ports Authority to be self-sustaining for two years. The port site is served by 26 truck lines, and five important railroads. More than 500 railroad freight cars can be handled on the authority's 13 mi of track.

• **Construction credit**—The facilities were designed by Robert and Co., architects and engineers of Atlanta.

Construction contracts for a major portion of the construction were awarded to the following: Contract for construction of the marginal wharf was let to Espy Paving and Construction Co.; for site development and utilities to Dixie Construction Co. and Robert Lee, Inc.; and outside electrical work to Peerless Electric Co. All of the contractors make Savannah their headquarters.

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Ohio River pollution control advances

E. Blackburn Moore, chairman of the Ohio River Valley Water Sanitation Commission (ORSANCO), said recently that facilities to serve almost a million people were either completed, under way, or approved in the plan stage to alleviate valley pollution.

His progress report indicated: 22 new plants in operation; 25 plants under construction; 47 final plans approved.

Moore said that this showed that the eight-state members of the ORSANCO were living up to their pledge of cooperative action under the compact for the control of pollution. Moore also called for stronger emphasis on clean-up action by communities and industries on the Ohio River.

He said that two public hearings already have been held by the commission on sewage treatment requirements on a 190-mi stretch of the river and that others would soon follow. Meantime, the commission is issuing notices for compliance to 19 municipalities and industries in Ohio, 25 in Kentucky and 6 in West Virginia, which are now discharging sewage in the sections where public hearings have already been conducted.

Early in the month the entire commission participated in ground-breaking ceremonies for the joint sewage works of 16 communities at Bromley, Ky. It will serve a population of 136,000 across the river from Cincinnati (ENR May 22, p. 44).

Meanwhile cities throughout the country continued their efforts to meet the problem of pollution:

• **Harrisburg, Pa.**—Mayor Claude R. Robins, opposed a statement by Gov. John S. Fine that the state eventually would have to make liberal loans to municipalities for the construction of sewage plants.

Unless the loans are interest-free, he said, communities can do better financially than the state by floating their own bond issues.

Robins has been a sparkplug among officials of Susquehanna River municipalities which have been demanding state aid to follow through with construction under the commonwealth's clean-streams program.

Fine said last month that state aid was out of the question, adding: "I do believe, however, that later on the state will have to aid local communities by liberal loans to get the work done."

Robins and Fine assailed threats of prosecution made by Sanitary Water Board officials.

• **Buffalo, N. Y.**—The Buffalo Sewer Authority has accepted a recommendation by five major industrial firms on the Buffalo River to employ the engineering firm of Nussbaumer Clarke & Velzy, Inc., for a $15,000 study on a project to cut pollution in the river and get more cooling water.

The project is part of the authority's Buffalo River pollution abatement program. The industries jointly pledged the money to finance the study. The study will determine the cost of construction of the necessary facilities to provide cooling water from Lake Erie for the five industries. This water would be discharged into the river and would be used to dilute waste from the plants.

• **Other pollution news**—U. S. Public Health Service rejected a request by the Richmond, Va., city council that it make a new pollution survey of the James River at Richmond. The State Water Control Board late in September gave the city 60 days to approve of a $16-million sewage disposal system. . . . Shelbyville, Tenn., is ready to proceed with the construction of a sewerage system and disposal plant. Pollution in the Duck River was reported to be increasing.

• **Application withdrawn**—Los Angeles Board of Public Works has dropped its plan to build a sewage reduction plant to treat sewage from the San Fernando Valley (ENR Aug. 21, p. 33).

At a hearing by the State Regional Water Pollution Control Board, President Harold W. Nash of the Los Angeles Board of Public Works withdrew the city's application.

The plant was to be a dewatering plant which would separate liquids from solids in the sewage. The solids were to go to Hyperion treatment plant and treated liquids discharged into the Los Angeles River.

Nash said that it would be too expensive for the plant to meet the Pollution Control Board's restrictions on effluent. He criticized the restrictions as based on "objections which were made without study."

Nash said that the dewatering plant would have cost about $10 million, whereas the only alternative—construction of a new outfall from San Fernando Valley to Hyperion—will cost $15 to $18 million.

(*Municipal continued on page 53*)

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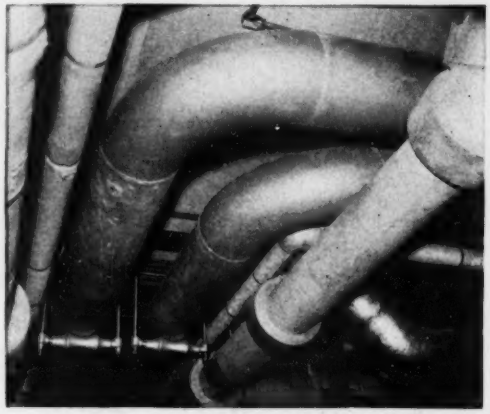

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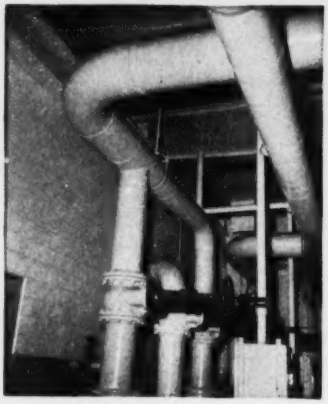

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MUNICIPAL

Feudin' and fussin' may lose city a building

The long standing feud between the cities of St. Paul and Minneapolis, Minn., broke out again last week over a projected new $5-million office building for the Prudential Insurance Co., of Newark, N. J.

The company, through its president, Carroll Shanks, picked Minneapolis as the location for the structure and had offered to pay $195,000 for a site in Theodore Wirth Park, just at the edge of the city.

The 32-acre tract of land belongs to the Minneapolis Board of Park Commissioners. Shank's offer went to the commission. The Minneapolis Chamber of Commerce learned of the bid and set up a big luncheon meeting at which Shanks was to make public announcement of the plans.

But the proposal ran into a snag when the park board failed, by one vote, to approve sale of the land to the insurance firm.

The luncheon turned into an indignation session with chamber officers literally shedding tears over the park board's action.

Meanwhile, I. E. Richard, city editor of the St. Paul DISPATCH got an idea—why not invite Prudential to St. Paul?

Mayor John Daubney of St. Paul and city councilmen did just that. They invited Shanks to inspect several sites in St. Paul, pointing out, among other things, that the tax rate in St. Paul was lower than it is in Minneapolis.

Alarmed, the Minneapolis Chamber of Commerce induced the park board to reconvene to reconsider its action. But when the park board convened late in the afternoon, Shanks had written withdrawing his offer for the Minneapolis sit, had visited three St. Paul sites, said he was "very much impressed," then had packed up and returned to Newark. Minneapolis newspaper advertisements welcoming Prudential to the city had to be cancelled.

Members of the Minneapolis city council and Minneapolis Mayor Eric Hoyer sent telegrams to Shanks, pleading with him to reconsider and buy the Theodore Wirth tract.

St. Paul officials spent their time drawing up charts and diagrams containing statistical information about St. Paul and rushed the material airmail to Shanks in Newark.

But Shanks wasn't being rushed into anything. He was quoted from Newark as saying "we're taking a fresh look at everything."

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MUNICIPAL

Fairibault, Minn., got into the act by also inviting Prudential to build there.

Adding to the confusion was the reaction of residents of Tyrol Hills, adjoining the Minneapolis site, who, although living outside the city limits, are against construction of the building.

Dallas to dam Trinity to relieve water shortage

In its efforts to alleviate a critical water shortage (ENR Nov 6, p. 51), the Dallas, Tex., city council last week tentatively decided to dam the West Fork of the Trinity River.

The council junked plans to tap either the Red River or one of Fort Worth's water source lakes on the advice of Carr T. Forrest, consulting engineer. Forrest said these plans were feasible, but would be tremendously expensive. Forrest also held that they would take too long to put into operation and might not produce enough water when finished, because of seepage and evaporation.

Forrest's firm of Forrest & Cotton had been engaged to study the Dallas water problem.

Forrest said that there is a flow of 30 mgd down the West Fork of the Trinity. A small dam just below the confluence of the West Fork and Elm Fork, from which Dallas now gets its water, would back up West Fork water along Elm Fork to the city's Bachman purification plant.

This could be done at comparatively small cost and Dallas could have the emergency water within 30 days, he said. Tapping the Red River or Eagle Mountain Lake near Fort Worth would take five months, he added.

• **Pollution ruled out**—Although Dallas Water Department officials had considered damming of the West Fork before Forrest made his suggestions they thought excessive pollution of the West Fork water (West Fork receives Fort Worth sewage) would rule out the plan. Forrest said that treatment would eliminate pollution.

The engineers also recommended that Dallas proceed with drilling three deep wells to produce 9 mgd. And if the drought goes on, said Forrest, another well should be bored each month. Cost of each well is estimated at $100,000.

No estimate of the cost of damming the West Fork was made, but it was considered cheaper than the estimated $500,000 Red River project and the $750,000 Eagle Ford Lake plan.

(*Municipal continued on page 57*)

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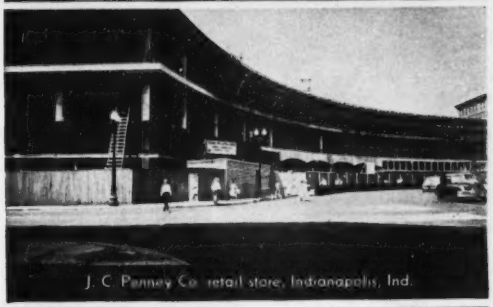

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Medical office building arouses controversy

Drawings are being prepared for a new medical office building on St. Louis' "hospital row," despite a pending lawsuit by owners of two nearby apartment buildings.

Cost of the 25-story structure is estimated at $5.5 million by the architect, Isadore Shank, of St. Louis. It will be called the 40 North Kingshighway Medical Building.

Now occupying the site is the 107-room Parkview Hotel, which is to be razed. The hotel was denied a city operating permit last January because it had failed to make structural changes required by the new city fire safety code.

The suit to block construction asked invalidation of the re-zoning ordinance and an injunction against issuance of a building permit, the suit said that construction would depreciate neighboring property values, cause an "intolerable" traffic condition and open the way for other commercial ventures in the area.

The Advisory City Loan Commission said that demand for physicians' office space in the vicinity is only about 40,000 to 50,000 sq ft. The commission said that space could be provided on nearby vacant lots already zoned commercially.

Attorney Israiel Treiman, an officer of the building company, expects to find more demand by sending a brochure to every doctor and dentist in St. Louis. The commission's conclusion was based on a limited canvas.

About 300 tenants are to be accommodated in the 150,000 sq ft of rentable floor space in the new building. Present plans call for movable interior partitions for easy arrangement.

The first and second floors will be for a rhomboid base for a 23-story hexagonal tower containing offices. In the first and second floors will be a pharmacy, lunchroom and attended nursery for children of patients. There is to be a 500-space parking area.

Marble probably will be used to face the first two stories, exterior of the tower is to be entirely of fixed windows of heat-resistant glass—blue green from the outside and clear on the inside—with aluminum mullions.

This will be the first structure in St. Louis to adopt this exterior treatment, first used on Lever House.

Construction, 100% fireproof, will be of concrete and welded steel frame.

A service core will carry utilities and facilities, including chilled water and compressed air to each office. The building will be air-conditioned.

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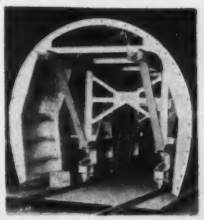

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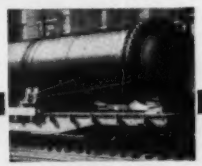

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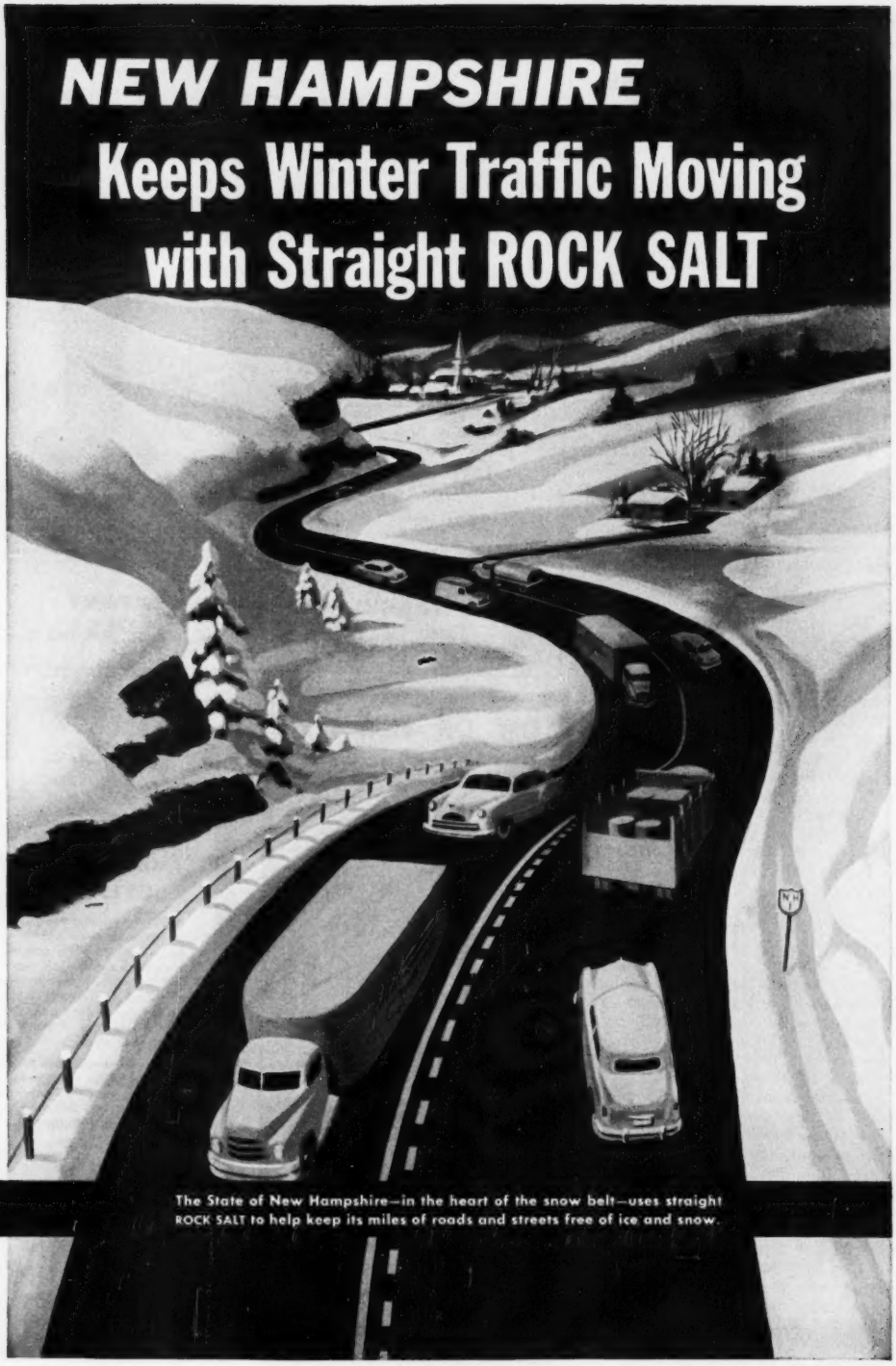

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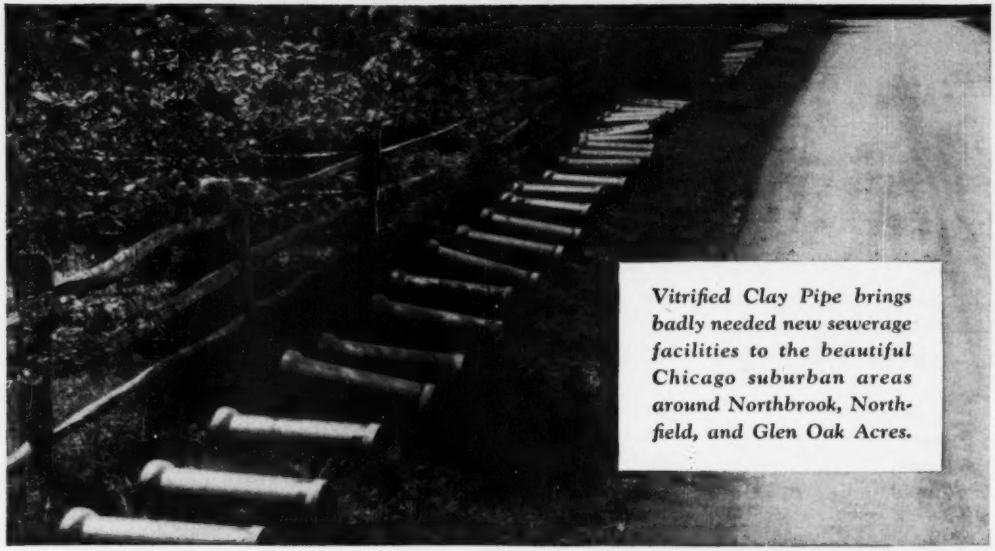

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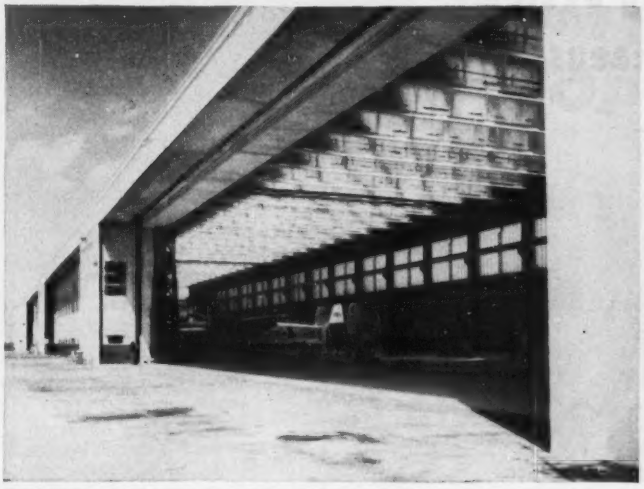


HANGAR at London Airport, England, has 150-ft door openings spanned by prestressed girders. These support 110-ft long, prestressed, precast beams.

Prestressed roof beams span 150 ft in hangar at London Airport

The roofs of two new hangars and a warehouse now under construction at London Airport, England, for British European Airways are supported on prestressed concrete beams with spans ranging up to 150 ft.

In plan, the buildings form a U, with the warehouse as the base. The hangars and associated shops are 900x211 ft and the warehouse 465x100 ft.

Each hangar occupies a 110-ft width of its building. In this area, clear height under the roof beams is 43 ft. The shops, which occupy the remainder of the building, are only 22 and 32 ft high.

• **Like a necklace**—The hangar roof consists of an aluminum deck supported on precast, prestressed concrete purlins, which span 15 ft between 110-ft long concrete beams. Also prestressed, the beams are T-shape in section. The top flange is 3 ft wide and 4 in. thick, while the web is 6 ft deep and 4 in. thick. Each beam weighs 27 tons.

These beams were precast in sections 7 ft long, with holes to receive the prestressing cables. The sections were assembled on the ground and mortared together. Precast anchorage blocks were placed at each end. Then, the cables were inserted, stressed and anchored, uniting the sections to form a beam. A crane erected the beams, placing them on prepared seats on spandrel girders.

The girders at the rear wall are reinforced concrete members spanning 30 ft. They are supported on reinforced concrete columns.

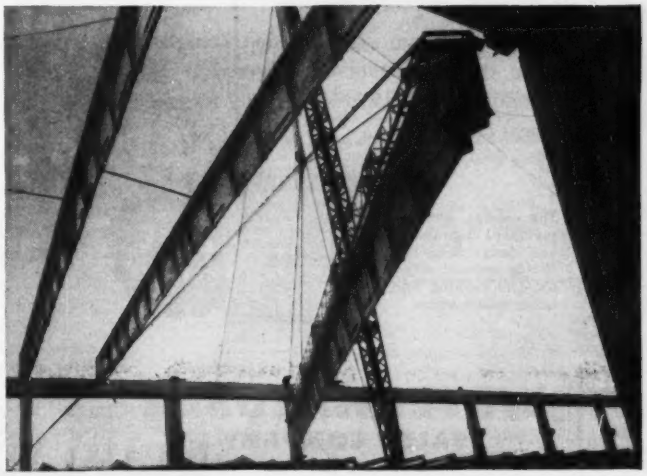
• **Hollow sections**—The girders at the front of the hangars span 150-ft door openings. Cast-in-place and prestressed, these members are supported at one end on a reinforced concrete column and at the other on a hollow-box pylon 30 ft wide by 5 ft 3 in. deep, with 4-in. thick walls. The pylons are separated from the less massive, solid columns by construction joints, and expansion joints are provided between the girders above the pylons. A reinforced concrete wall panel in front of each pylon houses the sliding folding doors.

The 150-ft girders are of hollow-box construction, 14 ft deep by 5 ft 3 in. wide. The top slab is 8 in. thick, the bottom slab 5½ in. thick and the webs 4 in. thick. They are stiffened with precast, prestressed diaphragms that were inserted in the formwork before the girders were cast.

Projecting from the outer face of the girders is a 9 ft wide continuous cantilevered canopy. On the inner face are bracket supports for crane girders.

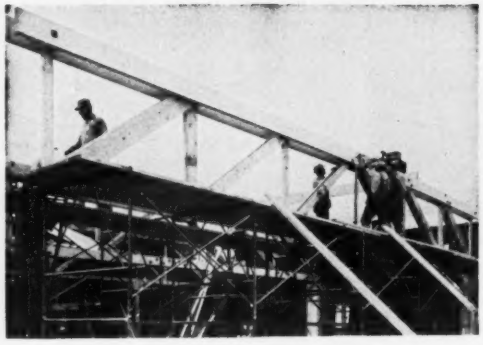
Each of the 150-ft girders was prestressed with 41 cables, which were laid parabolically in the webs and horizontally in the bottom slab. Each cable consisted of twelve 0.2-in. dia steel wires.

Roofs over the shops and the warehouse also are supported on pre-



T-shape beams case on the ground were erected with a crane. They were formed by joining 7-ft long precast sections with prestressing cables.

Structural Wood Framing Systems by Weyerhaeuser



Engineering in lumber has developed a broad line of structural wood products, precision fabricated by Weyerhaeuser. A variety of types of roof trusses is offered: bowstring, flat top, tandem, and pitches, for post-free clear span buildings, 30 feet and wider . . . round top and pitched type trussed rafters . . . segmental arched rafters for 30 to 50 foot spans . . . buttressed arches for 50 to 100 foot spans . . . girders and other wood structural systems.

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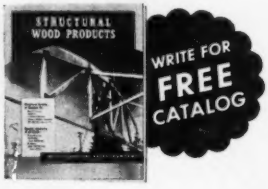

WEYERHAEUSER
SALES COMPANY
FABRICATING DEPARTMENT
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stressed beams, but the spans are much shorter than those in the hangars.

Scott and Wilson were consulting engineers for the owners, in association with Keith Murray, architect, of Ramsey, Murray and White. The design was carried out by the general contractor, Holland & Hannen and Cubbitts, Ltd., in collaboration with the Concrete Development Co., Ltd., and the Prestressed Concrete Co., Ltd. A. E. Beer was consulting structural engineer for the contractor.

Build shopping centers in Canadian cities

Although no total figures have been put together, Canada has been following the lead of the U. S. in the construction of suburban shopping centers as an aid to suburban areas and also to relieve metropolitan congestion.

Despite the relative novelty of such structures in Canada, centers varying in cost from $300,000 to $3,000,000 are going up.

The biggest development to date is in the Toronto metropolitan area, where one builder alone—Principal Investments Ltd.—has completed a shopping center costing over $1,000,000, is building another for $3,000,000 and has two more ready to go at $2,000,000 each. Numerous other centers in the Toronto district will vary in cost from $300,000 to $800,000.

Next largest center development is in Montreal, where Maxwell Cummings & Sons have a $2,500,000 program planned for starting before the end of this year.

• **Slow start**—Several factors have been responsible for the slow development of shopping centers in Canada, according to A. B. Bennett of Principal Investments Ltd.

These factors have included Canada's smaller population than that of the U. S. and the limited number of department stores (which normally form the backbone of shopping centers in the United States). Canada has only three major department store organizations that have branch stores in all principal cities. None of these organizations has felt the necessity as yet of moving to the suburban areas with branch stores and none of them are located at any of the new centers being built or planned, although smaller department store groups are connected with the new centers.

• **Planning**—Various plans are in use in the Dominion.

(Continued on page 64)

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INTERNATIONAL

The largest centers are being built on corner lots at intersections of main highways, with ample parking areas on the corner, and stores facing the corner in two sides of a square. This layout is being used by Principal Investments since it provides for large parking areas, easy access, gives stores equal view of the lot and allows a sizable open area for community affairs. Many of the shopping developments are also providing additional space for medical and professional offices above stores. Almost all the building is being done with steel and wood frame, concrete floors, brick and concrete block walls. Most structures are one story in height.

International . . .

• **Seek bidders**—Foreign engineering and contracting organizations will be asked to submit bids within a year on major works associated with Australia's huge Snowy Mountains hydro projects, according to National Developments Minister Spooner. There will be enough work, Spooner said, to keep at least four large civil engineering organizations busy for five years. Work to be let includes two 21-ft dia concrete lined tunnels a total of 18 miles long, a 289-ft high concrete arch dam, and an underground power station. It is expected that financing will be arranged by the time bids are received, possibly late next year.

• **British colonies build**—Governments of colonial territories are now undertaking large-scale construction projects that will total more than $300 million in value. Nearly a quarter of the total will go for electricity and power, another quarter for transportation facilities, and smaller amounts for waterworks, ports and harbors, irrigation and drainage, and airfield construction.

• **Australian harbors**—Australia is planning to spend $170 million—and probably much more—on major port and harbor works.

• **Bulgaria gets started**—Although Bulgaria's five-year plan has been held up—because of what observers agree is a combination of too much rush and too little technical competence—the program is being pushed rapidly now, government sources say. Included in the plan are: A 30,000-kw steam power station near Sofia, and another in Pernik; construction of three dams for hydro power and irrigation; and considerable industrial development work.

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Fact No. 2

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Chevrolet's time-proved Thriftmaster and Loadmaster Valve-in-Head engines are famed for fuel, oil and upkeep economies. Extra-rugged frame, hypoid rear axle, Flexi-Mounted cab, and other features keep the truck rolling for many thousands of low-cost miles.

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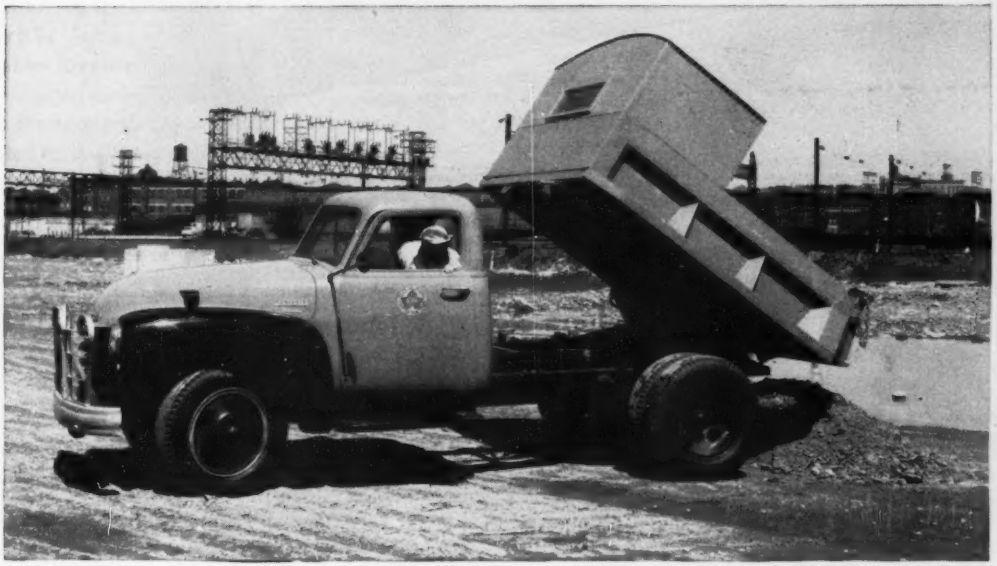
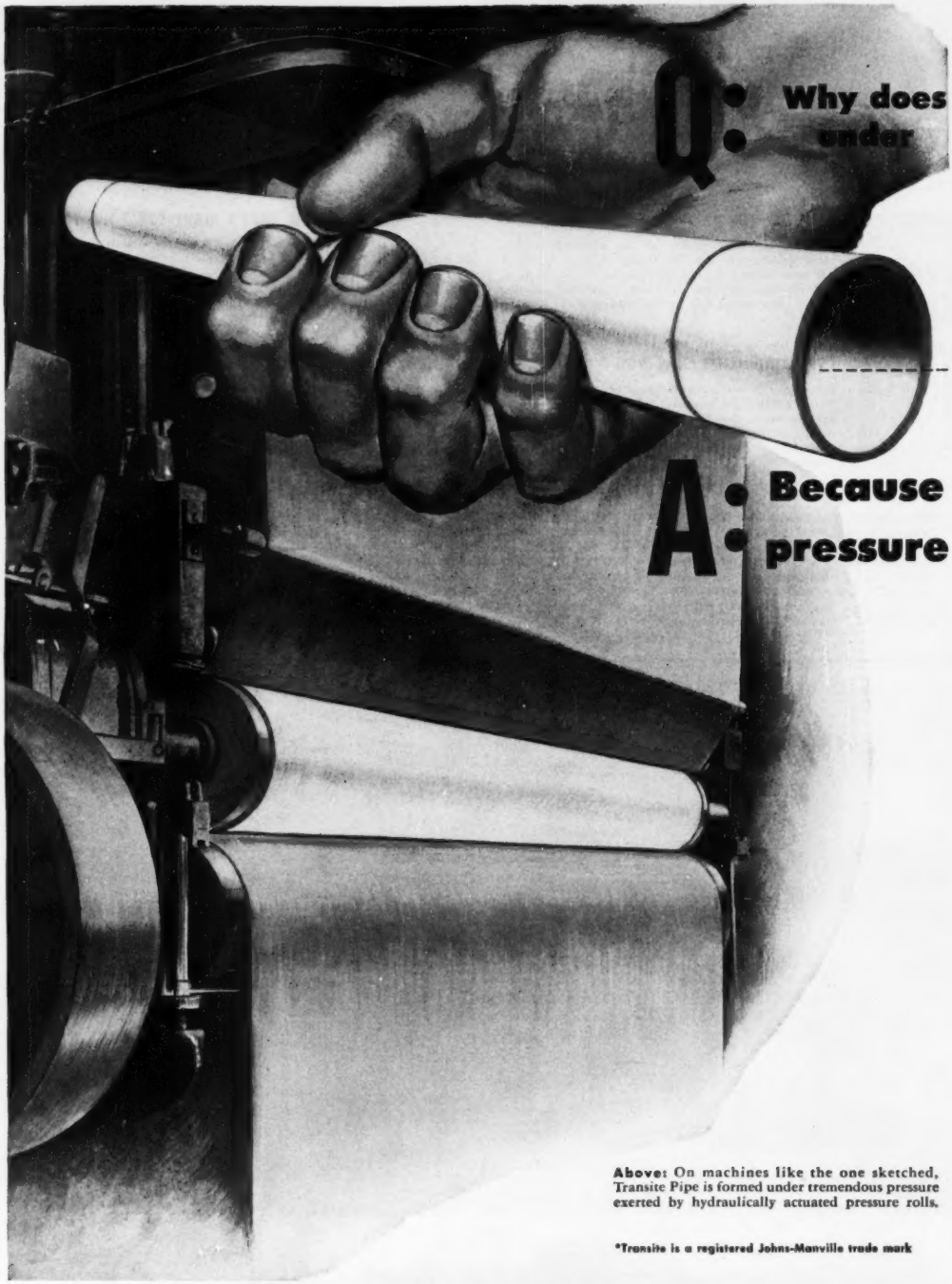


CHEVROLET first in demand in value in sales



Above: On machines like the one sketched, Transite Pipe is formed under tremendous pressure exerted by hydraulically actuated pressure rolls.

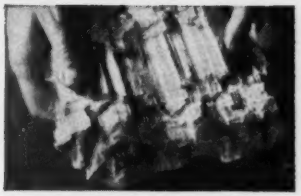
*Transite is a registered Johns-Manville trade mark

Johns-Manville TRANSITE

TRANSITE PIPE last longer these Texas city streets?

The water system in this fast-growing Texas city is a tribute to the lasting strength and corrosion resistance that enable Transite Pipe installations to outlast other pipe under busy city streets. The first Transite mains were installed here in 1939 to replace previously used pipe which had a service life of approximately seven years. So successful was this original installation that today, virtually the entire supply and distribution system consists of Transite mains.

it's formed under tremendous for lasting strength



Tough, strong asbestos fibers reinforce Transite Pipe—contribute to its exceptional corrosion resistance and lasting strength.

Yes, it's the all-important quality of *lasting strength* that enables Transite* Pressure Pipe to stand up under conditions highly adverse to ordinary pipe—as typified by the Texas city installation shown in the photograph above.

One of the reasons why Transite Pipe has this exceptional ability is the process used in its manufacture.

On specially designed pipe-forming machines, the materials that go into its making—asbestos, cement and silica . . . are consolidated under heavy pressure into a tough, dense homogeneous pipe wall structure. And reinforcing this structure . . . distributed uniformly throughout each length of pipe . . . are countless indestructible fibers of asbestos with a tensile strength comparable to that of steel. *No wonder this modern asbestos-cement pipe is strong and stays strong through the years!*

And no wonder thousands of American cities and towns have found it the answer to today's need for a pipe that assures the greatest possible return on waterline investments. For in addition to those economies resulting from lasting strength, Transite Pipe also provides other important savings. Its light weight and easy handling reduce installation costs. Its tight, flexible Simplex Couplings cut down on costly leakage losses. Its smooth interior assures a high coefficient of flow (C=140) and, because Transite cannot tuberculate, helps keep pumping costs permanently low through the years.

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The pressure steam curing process—another reason why Transite Pipe survives corrosive attack and stays strong in service.

Transite's tight, flexible Simplex Couplings help relieve the line of excessive flexural stresses and safeguard against leakage and resulting undermining effects on water mains.

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LEGAL

Damages due to delays

An electrical contractor entered into a contract with the government to install a field lighting system at an airport then under construction. The job was to be completed within 120 days after the contractor received notice to proceed. It was not completed for 277 days. Delays in building several runways and taxiways kept the electrical contractor from performing his part of the work.

The contractor brought an action against the government to recover the damages sustained by reason of said delays. The Court of Claims granted him a judgment holding that the government breached its contract by failing to make the runways available in time for the contractor to do its work within 120 days. The judgment against the government was for administrative expenses incurred during the period of delay.

The Supreme Court reversed this judgment, holding that the government did not by any single word or clause in the contract expressly agree to make the runways available at any particular time. The court also held that the obligation to complete the job in 120 days did not create an obligation on the part of the government to have the work in a state of condition so that the contractor could perform the work within the time stipulated in the contract.

The court in its opinion stated: "The contract reserved a governmental right to make changes in the work which might cause interruption and delay, required respondent (contractor) to coordinate his work with the other work being done on the site, and clearly contemplated that he would take up his work on the runway sections as they were intermittently completed and paved. Article 9 of the contract entitled 'Delays-Damages,' set out a procedure to govern both parties in case of respondent's delay in completion, whether such delay was caused by respondent, the government, or other causes . . . procedure was outlined for extending the time in which respondent was required to complete its contract, and relieving him from penalties of contract termination or liquidated damages."

The court held that it was apparent from the terms of the contract and the extrinsic facts involved in the case that changes and delays were anticipated and the remedies therefor provided for in the contract. The court

(*Continued on page 71*)

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WANT to step up schedules? Cut maintenance cost? Substantially reduce tire wear?

You can do it with Sterling-White Plan-A-Power!

Based on the cost records of leaders in construction industries, Sterling-White pays off every day . . . for more years. Engineered to exact work conditions, Sterlings can take it . . . can cut costs . . . can do more work.

Ask your Sterling-White Representative to provide facts about Sterling-White economy tailored right to your operations.

Sterling White

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referred to two other cases[2] where that court held under similar circumstances that the contractor was not entitled to recover damages sustained by reason of delays in having the work in such state of preparedness as to permit the contractor to perform its contract.

In an action[3] against the State of New York to recover damages resulting from delays, the contract was one to erect the superstructure of a bridge. Representatives of the state directed the contractor to proceed with the work at a time that the substructures were not completed and these instructions caused a delay of 21 months in the performance of the job. The action was brought to recover the damages sustained by reason of such delay.

The court held that the delay was so unreasonable as to constitute a breach of contract entitling the contractor to recover the damages so sustained.

It is to be noted that in this case, the contract not only provided for an extension of time in the event that the contractor was delayed in the performance of the job but also provided that it would make no claim for damages in the event he was delayed in the performance of the work.

In another case[4] where the government was involved, the contractor had entered into a contract with the government to manufacture concrete practice bombs. The manufacture of these bombs required certain tail assemblies which were to be furnished by the government. The bombs were to be delivered complete with tail assemblies within 45 days. Due to delays on the part of the government in furnishing the tail assemblies, the contractor was unable to make the last delivery of the bombs until four months after the date of delivery set forth in the contract.

The contractor brought an action to recover the damages sustained by reason of the late deliveries of the tail assemblies by the government and was allowed a recovery notwithstanding that the contract contained a provision to the effect that in the event the contractor was delayed it would be granted an extension of time in which to perform.

(1) Howard P. Foley., Inc., v United States, 329 U.S. 64, 91 L.Ed. 44.
(2) H.E. Crook Co. v United States, 270 U.S. 4, 70 L.Ed. 438; United States v Rice, 317 U.S. 61, 87 L.Ed. 53.
(3) American Bridge Co. v State, 245 App. Div. 535, 283 N.Y.S. 577.
(4) Kehm v United States, 93 F. Supp. 621.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

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For almost any fastening job into steel or concrete, your RAMSET Dealer can probably help you do it faster, easier, at lower cost.

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PUMPING 5 MILLION GAL
DAILY FOR NEARLY 6 MONTHS

PHOTO SHOWS small part of a dewatered area for receiving pit 200x 31 ft, the soil being extremely coarse sand with overburden of meadow mat. Prior to drainage, ground water table sometimes rose as high as 2 ft above natural ground, due to tides. Inleading ramp necessitated a 40-ft gap in header perimeter.

• Certainly no simple problem! Yet a Griffin Wellpoint system (still at work as this is written) has continuously handled 5,000,000 gal a day, maintaining this heavy burden for 6 months. Pumps have been swallowing vast quantities of salt water from Jamaica Bay 2000 ft away. Despite this, they have held up perfectly and standby capacity has never been used. That's Griffin dependability!

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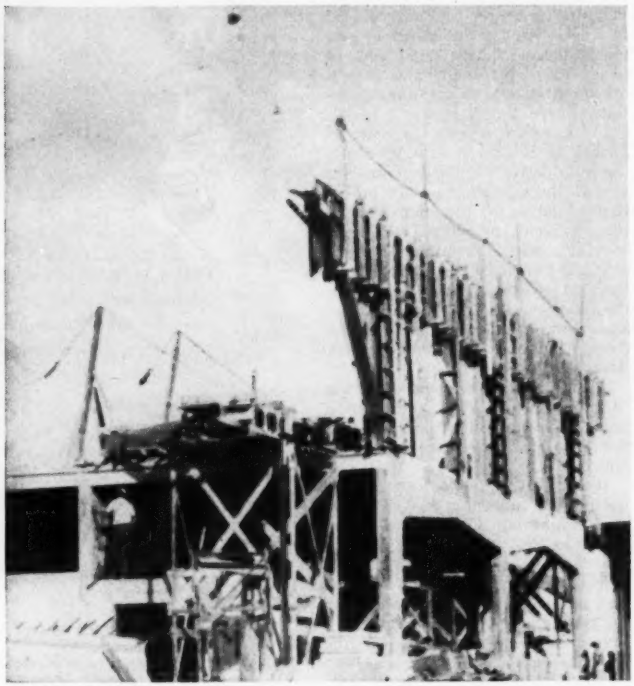
FIELD AND OFFICE



RIGID FRAMES for a Florida plant were cast in prefabricated forms, which had been assembled, with the reinforcing steel, on the floor nearby. (Portland Cement Assn. photo)

Tilt-up forms pare building costs

Adapting tilt-up techniques to formwork, Burt Roemer, contractor, of Belle Grade, Fla., cut construction costs of a 260x340-ft vegetable precooling plant near his home city. The main structural framing of this building consists of 52 reinforced concrete rigid frames with spans up to 50 ft. Roemer's tilt-up method enabled him to do the job with only five sets of wood forms.

Forms were built and steel placed on the floor adjacent to the position the frames were to occupy. Then, the forms were tilted into place with two hand winches. Two bays were erected at one time.

The rigid frames support a 2½-in. thick roof slab on precast concrete joists. By welding reinforcing bars of adjoining joists at the frames and filling the space between joist ends with concrete, the contractor made the construction continuous.

Lakeland Engineering Associates, of Lakeland, Fla., designed the plant, worked out the construction method with Roemer and supervised the job.

Fast layout of curves

I have hit upon a method of staking out a horizontal curve without lengthy computations prior to actual staking: Given radius and intersection angle of a horizontal curve, compute the distance from the PC to the PI, and here's all you have to do:

Set up the transit at the PC, shoot the PI, and get under way. By using chords equal to one-tenth of the radius of the curve, the deflection angle for each chord will always be 172 min (2 deg 52 min).

Assume a curve to have a length of 300 ft with a radius of 500 ft if you use 50 ft chords and swing deflection angles of 172 min, you will hit the PT with a minimum of error. ALEX E. KESSLER, *City Engineer, Ripon, Wis.*

(Field & Office continued on page 75)

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IT TAMPS! IT BACKFILLS! IT LAYS PIPE!

- Tamps—backfills—travels simultaneously
- Tamps 380 Ft-lb blow 45 times per minute
- Tamps from side or straddling trench
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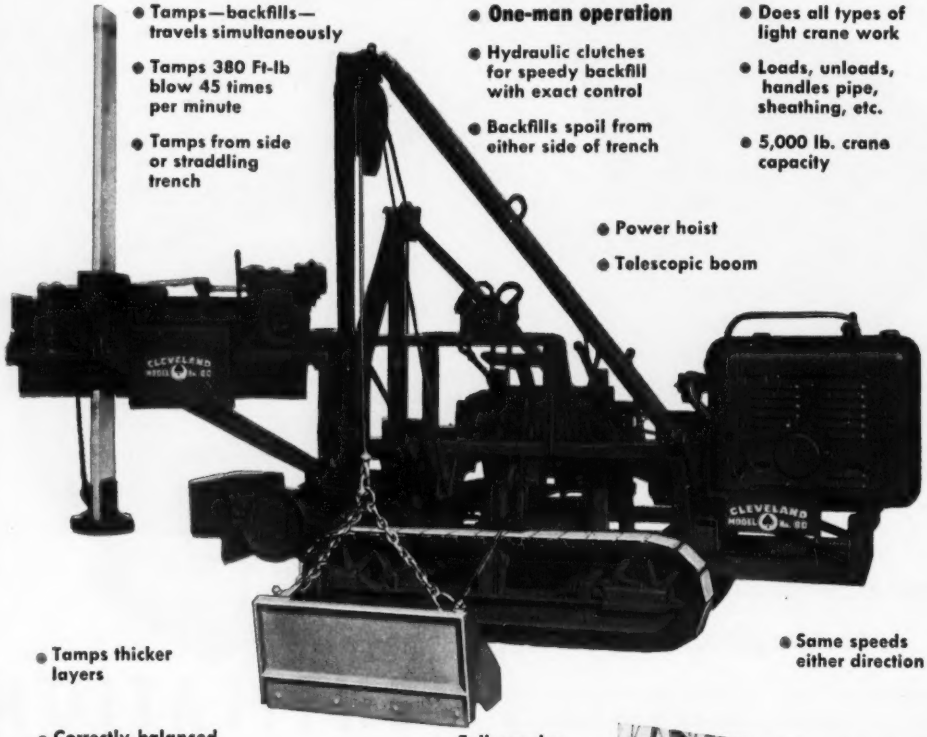
- Power hoist
- Telescopic boom



- Tamps thicker layers
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- Full crawler maneuverability
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A MACHINE THAT BELONGS IN YOUR '53 PLANS

Get more work for your budget dollar! The "80" is time-tested and job-proved—for tamping, backfilling, pipe handling and other types of trench completion work. Get complete information on it *now!*

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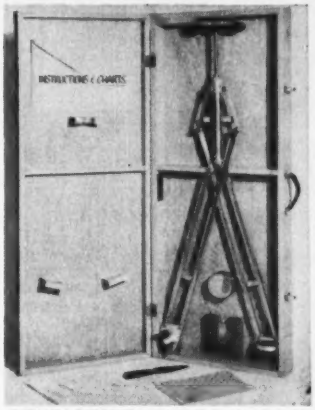


COMPACT KIT carries all equipment for making quick soil-shear tests.

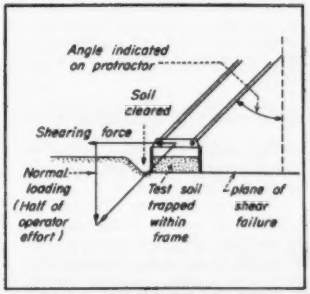
Navy lab develops device for quick soil appraisal

Called a "soil truss," this device translates vertical force into vertical and horizontal components at the two legs. One leg has a shoe that digs itself into the earth to establish an abutment. The other leg carries a vertical-axis sampling cylinder.

In use, the truss is set at a trial angle from the vertical and dug in at one leg. The cylinder is pressed into the soil. Then earth is cut away from the outside of the cylinder and pressure is applied to the handle. (Pounds pressure are measured by scales in the vertical shaft.)

By varying the truss angle it is possible to get: (1) The shearing strength of the soil at zero normal loading, and (2) the rate of increase of shearing strength with normal loading. A simple field chart converts instrument readings into shearing strength of soil being tested. In the diagram the prop-

(Continued on next page)



SAMPLING CYLINDER takes horizontal and vertical stress from one leg of truss.

The Springs Cotton Mills, Fort Mill, S. C.

Design Engineers: Robert & Company, Inc., Atlanta, Ga.

General Contractors: George A. Fuller Company, New York City.

Latest thing in Southern Fashions

● You'll have to admit that this is one of the most striking office-research buildings ever erected in the South—or anywhere else for that matter.

Exterior walls are insulated with easy-to-lay blocks of all-glass FOAMGLAS; and as shown above, heating and cooling pipes are placed right in the walls over the FOAMGLAS. Here, FOAMGLAS does two jobs: 1) it makes the heating-cooling system more efficient, and 2) it serves as a practically indestructible insulation.

Every block of FOAMGLAS contains millions of tiny cells individually sealed in a true, inorganic glass. There are no organic binders or fillers of any kind. This all-glass, cellular construction is the secret of the high insulating value of FOAMGLAS and its excellent resistance to chemicals and water.

Let us send you a free sample of this unusual insulating material. Just fill in the coupon and check the booklets you want.

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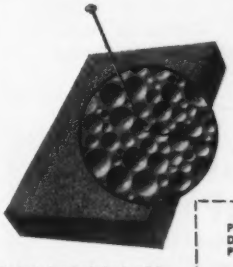

The best glass insulation is cellular glass. The only cellular glass insulation is FOAMGLAS. This unique material is composed of still air, sealed in minute glass cells. It is light weight, incombustible, verminproof. It has unusually high resistance to moisture, chemicals and many other elements that cause insulation to deteriorate.

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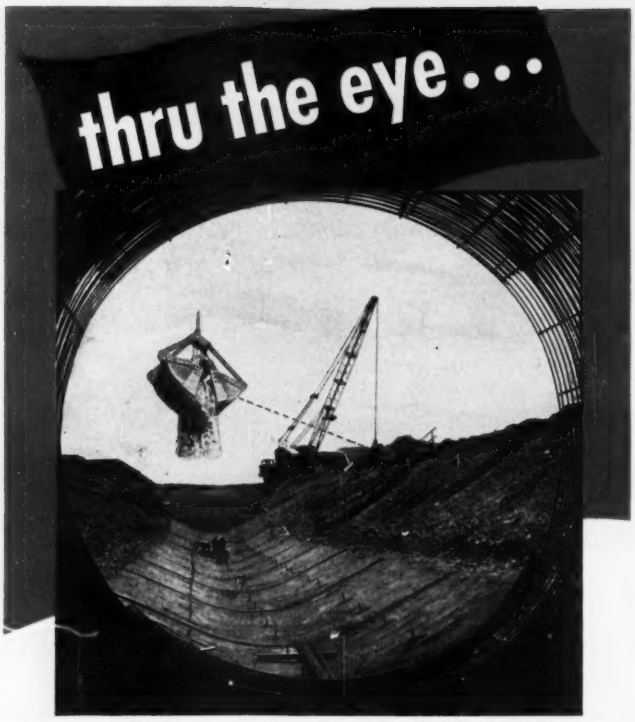

of a Culvert, a Contractor, or an Operator an OWEN BUCKET *"looks good"*

To a practical person looking out of a culvert such as this one, comes the suggestion of exceptionally great and economical digging ability or an Owen Bucket wouldn't have been selected.

To the contractor it recalls consistently good performance for years which has prompted him to reorder Owen Buckets year after year.

To the operator comes a reminder of how an Owen Bucket performs under varying difficult conditions, responding to his every demand and "stands up" with outstanding ability long after many buckets would have been relegated to the scrap heap.

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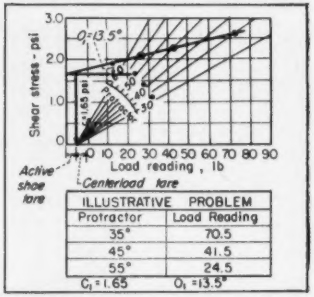
Branches: New York, Philadelphia, Chicago, Berkeley, Calif.



ILLUSTRATIVE PROBLEM	
Protractor	Load Reading
35°	70.5
45°	41.5
55°	24.5

C_1 = 1.65 Q_1 = 13.5°

FIELD CHART converts instrument readings into shearing strength of soil tested.

erties (shear at zero loading and the rate of shear-increase with increased loading) are shown as C and O.

The truss was developed by the U.S. Navy's Civil Engineering Research Laboratory at Port Hueneme, Calif. Stanley Weiss reported it in the Civil Engineer Corps Bulletin, and states that truss tests will be correlated with other more time-consuming tests to check validity.

Novel use of a kite

In replacing control wires on the damper of a spark arrester on a 120-ft smokestack, the job was quickly and inexpensively done by flying into position a kite which had a ground string attached to its tail—being paid out by a second operator as the kite gained altitude. When the flying string was brought to rest on the stem of the damper control, each operator then approached the base of the stack.

The flying string of the kite was then hauled over the stem of the T-bar, and down to the ground. A stronger string, a light rope, then a set of pulley blocks was strapped and hoisted into position.

A bosun's chair was rigged to which the replacement wires were attached, after providing for free ends of 8 ft for easy manipulation in installing. In a matter of minutes an operator was hoisted aloft who made the wires fast to the ends of the T controlling the damper. PRESTON TAYLOR, DETROIT, MICH.

ANY SUGGESTIONS?

We would like to hear of interesting new devices and methods devised by our readers to speed up and simplify field work; or of new techniques intended to simplify design computations. We will pay for published items, so send your suggestions to ENR's Field and Office Editor at 330 W. 42nd St., New York 36, N. Y.

This F-8 BIG JOB mounts a 10-yd. Anthony dump body. There's a Ford Truck built to meet *your* requirements.

"I truck 12-ton loads of sand, yet my running costs are Only 3⅘¢ a mile"

says Charles Laws, Concord, California

"I've had experience with many makes of trucks," says Mr. Laws, "but none of them cost as little to run as my Ford. It saves gas and gives me more speed-hauling power, too." During the Economy Run, Mr. Laws' F-8 trucked 12-ton loads of washed sand 8,118 miles. Yet running expenses for gas, oil and service (but not including fixed expenses, such as, taxes, license, insurance, depreciation, etc.) totaled $297.59. That's a running cost of just 3⅘ cents a mile!

Two years of testing show how well the new Ford LOW-FRICTION engines perform under the most severe conditions. They passed scores of 100-hour "destruction" tests. One model alone ran as much as 50,000 dynamometer test-hours, over 500,000 vehicle test-miles.

Now! Up to 14% more Gas Savings

and more Speed Hauling power, too!

New LOW-FRICTION design in three Ford Truck engines means more miles per gallon. New direct-breathing OVERHEAD VALVES give more efficient fuel-feeding. New HIGH COMPRESSION offers more power on regular gas. Choose from 5 great engines: new 101-h.p. COST CLIPPER SIX; famous 106-h.p. V-8; proved 112-h.p. BIG SIX; two new CARGO KING V-8's developing 145 h.p. and 155 h.p.

DON'T GUESS! See how little it can cost to run a truck in your kind of work. See the cost figures in this 144-page book showing results from the 50-million-mile Ford Truck Economy Run. See it at your Ford Dealer's!

Availability of equipment, accessories and trim as illustrated is dependent on material supply conditions!

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Using latest registration data on 8,069,000 trucks, life insurance experts prove Ford Trucks last longer!

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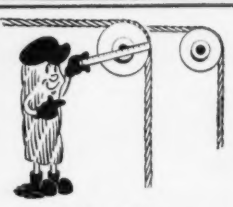
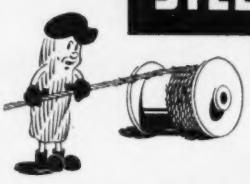
do you want to cut operating costs?

J&L STEEL

Here are a few tips on longer Wire Rope Service Life!



Avoid Small Drums and Sheaves

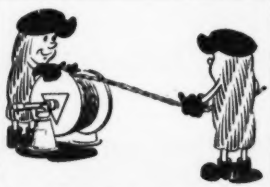


Keep Lines from Rubbing

Keep Drums and Sheaves Aligned

Check Your Sheave and Drum Grooves

Lubricate Your Lines Regularly



Use Jacks When Transferring Lines from Reel to Drum

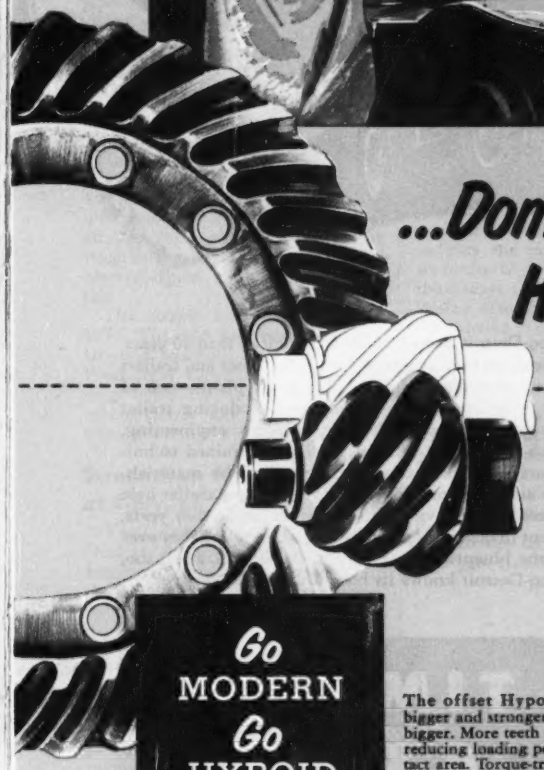
SPECIFY J&L WIRE ROPES FOR YOUR EQUIPMENT

Proof of the value of any wire rope lies in its performance on the job. The unexcelled performance record of J&L Wire Ropes can be traced to J&L's *quality control* method of manufacture. *Quality control* that ensures the finest finished product by regulating every step in the manufacture of wire rope from the mining of iron ore to final stranding and closing operations. The result is wire rope that provides maximum service life—helps keep your operating costs to a minimum by cutting down time for re-rigging and making possible maximum production per wire rope dollar.

If you're not already using J&L wire rope, why not contact your nearest J&L representative *today*.

JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH 30, PA.

You wouldn't buy a truck today with oil lamps!..



...Don't buy a truck without HYPOID axle gearing!

Oil lamps on a *modern* truck? You'd have no part of them! But why stop there? The axles that carry, move and stop the load are *much more important.* Make sure they're dependable Timken-Detroit Axles with *modern* Hypoid Gearing!

This rugged axle gearing is built for the modern truck—built to operate at peak efficiency, day after day, under the toughest conditions. And this is no idle boast. Hypoid Gearing has been *tried* and *proved* by billions of ton-miles of operation. You'll find, too, that Hypoid Gearing adds miles to the life of your truck at lower maintenance costs!

The next time you buy a truck, make sure the all-important axles are as modern as the rest of the vehicle. Specify Timken-Detroit Axles and Brakes!

Go MODERN Go HYPOID

The offset Hypoid pinion is bigger and stronger. Bearings are bigger. More teeth are in contact, reducing loading per unit of contact area. Torque-transmitting capacity is increased. Slower gear ratios are practical without loss of strength.

Only Timken-Detroit offers Hypoid Gearing in all three types of final drives . . . single-reduction, double-reduction, and two-speed double-reduction . . . in a complete range of capacities.

TIMKEN Detroit AXLES

A PRODUCT OF THE TIMKEN-DETROIT AXLE COMPANY
DETROIT 32, MICHIGAN

The Accepted Standard

TRADE MARK REGISTERED

The best-engineered trailer axles on the road come from Timken-Detroit!

This modern manufacturing plant, located at Kenton, Ohio, houses the Trailer Axle Division of The Timken-Detroit Axle Company.

Timken-Detroit *knows* trailer axles! More than 40 years' experience in building axles for trucks, buses and trailers attest to that! Furthermore, nine great plants—one of which is devoted to developing and producing trailer axles—are provided with every modern engineering, research and production facility. Highly trained technicians are constantly at work improving the materials, design and workmanship that go into every trailer axle produced by Timken-Detroit. Months, and often years, are spent in developing and testing axles before they ever leave the blueprint stage. In the trailer axle field, too, Timken-Detroit knows its business!

WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSES AND TRAILERS

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TIMKEN Detroit AXLES

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RESEARCH

Fellowship opportunities are announced

Announcements and application blanks for the graduate fellowship program of the National Science Foundation are now available to students all over the United States who are American citizens.

More than 500 fellows will be selected for a year's graduate study, including those in engineering. The stipends vary from $1,400 to $3,400, and selection will be based on academic records and recommendations.

Application blanks may be obtained from the Fellowship Office, National Research Council, Washington 25, D. C. Completed applications must be returned by Jan. 5, 1953. The special examination for predoctoral students will be given at various places throughout the country on Jan. 31, 1953. Applicants will be rated by fellowship boards established by the academy. Final selection of fellows will be made by the National Science Foundation.

• **Undergraduate awards**—The James F. Lincoln Arc Welding Foundation will make 46 awards to engineering undergraduates for the best design of a machine, machine component, structure or structural part that has been designed for welded construction.

The awards are $750, $500 and $250. The rules and conditions booklet, now available from the Lincoln Foundation, Cleveland 17, Ohio, gives suggestions for subject matter, a bibliography, and previous award titles illustrated with drawings.

Streamflow forecasting at Univ. of Washington

The University of Washington will conduct an investigation leading to long-range streamflow forecasting in the Columbia River Basin as required for power, under a two-year contract negotiated with the Bonneville Power Administration.

The study will be made cooperatively by the department of civil engineering and the department of climatology and meteorology. T. H. Campbell, associate professor of civil engineering, will be the supervisor.

With additional storage reservoirs and power-generation facilities now being added on the Columbia River and its major tributaries, the problem of accurate and continuous evaluation of the river's power potential has assumed

SPEEDS CONSTRUCTION SCHEDULE 33⅓%

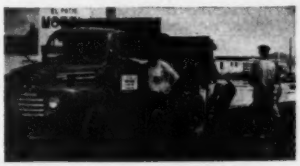
Ole Hansen & Sons Construction Co., specialists in large highway-bridge construction, picked G-E 2-way radio to coordinate and expedite their work. On a six-bridge U. S. 30 job recently, they cut thirty days off a three month schedule. Walter Hansen says: "We've simplified the ordering of material or equipment and made surveys across normally impassable terrain with General Electric 2-way radio coordination."

"Scotty" Robertson, master mechanic, gets a breakdown report at the base shop via General Electric 2-way radio.

This is just one of many cases where instant communication proved itself an important asset right from the start. Do you have an area control problem with trucking, repairs, shipping? Voice contact via G-E 2-way radio is the answer!

Consult the CAS* man in the G-E office near you. Call him today!

**Communications Advisory Service*



Ole Hansen construction crew prepares a bridge approach with General Electric 2-way radio standing by to order supplies.

General Electric Company, Section 22112-13
Electronics Park, Syracuse, New York
Send information on how G-E 2-way radio can save me time, money!

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make bridge-building dollars GO FARTHER

with permanent bridges of engineered timber

Timber trusses with glulam top and bottom chords support this secondary highway bridge of 113-foot span. Laminated timber deck provides roadway 24 feet between wheel guards.

This husky, modern bridge combines reasonable cost, long life, and freedom from costly maintenance. It illustrates a sure way of getting the most out of your bridge building funds.

Top and bottom truss chords are glued laminated—"factory grown" of seasoned material, permanently bonded with waterproof glues. Joining these chords to other members of the bridge are connecting devices of proved engineering values, including split ring connectors, shear plates and gusset plates.

Design of your bridge may be that of your own engineers; or if you prefer, any or all of the engineering may be done by the experienced specialists on the Timber Structures staff. Lamination and fabrication are done to detail and pattern by skilled workmen using precision methods and equipment so that the bridge members reach the jobsite ready for fast, easy erection. Approved preservative treatments, when required, are readily available.

The bowstring truss bridge is only one of several standard types offered by Timber Structures, Inc. Other types are illustrated in a folder, "Permanent Timber Bridges". You may get a copy of this folder from your nearest Timber Structures office; or mail the coupon, and your copy will reach you promptly.

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increased importance. A detailed and continuous study of the climatological and hydrological aspects of the problem is being undertaken by the University.

Studies will deal with the effect of temperature on the melting of snow, distribution of rainfall and runoff, correlation of data with seasons, temperatures, and statistical studies to determine the applicability of theories of pattern and persistance to flow forecasting.

Research lab established at Vanderbilt University

An industrial research laboratory to provide research assistance to small middle Tennessee businesses on a contract basis has been installed at Vanderbilt University, Nashville, with Fred J. Lewis, dean of the school of engineering, as head. Most of the research work will be at the university's school of engineering, although other departments will be available through the program.

This is an example of the type of work to be done:

An owner of a small middle Tennessee firm might wish to develop a new type of paint, but his business might not be large enough to afford the cost of setting up an industrial laboratory. Instead, he could turn to the Vanderbilt research lab and have the work carried out by specialists.

The division will make use of present facilities and personnel, it was announced.

Timber construction men form new organization

Fourteen structural lumber fabricators have joined together to form the American Institute of Timber Construction.

Aims and objectives of the group are those normal to such trade associations. Specifically, it will promulgate standards for the structural timber fabrication industry on design, fabrication, erection and classification. A code of standard practice will be established. The group working through technical committees will attempt to crystallize and make available the rapid advances in the art.

Beside active members (i.e. the 14 charter members and other fabricators who later join), the institute will invite membership by individuals and by others interested in the industry as associate and subscribing members.

Headquarters of the institute is temporarily located in Los Angeles.

"I can't keep up with Murphy's gang since they got the *THOR 25's!*"

Thor PORTABLE POWER **TOOLS**

INDEPENDENT PNEUMATIC TOOL COMPANY
AURORA, ILLINOIS

YOUR "gang" will break up more concrete faster, too . . . with Thor "25" Paving Breakers—for years the outstanding performers in the 80-pound demolition class! See them described—with Thor's 30, 60 and 70 pound breakers—in the new Thor 1952 construction tool Catalog 43. Write today for free copy, or see your local Thor distributor.

PAVING BREAKERS • CLAY DIGGERS • TRENCH DIGGERS
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Write for your copy of the Nelweld Construction Application Manual

Fasten it Better...at Less Cost, with NELWELD

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BOOKS

New Engineering Books

THE NATIONAL PLUMBING CODE ILLUSTRATED—188 pp. Manas Publications, 4513 Potomac Avenue, N. W., Washington 7, D. C. $3.00.

UNIFORM BUILDING CODE, 1952 Edition, Volume 1. Published by the Pacific Coast Building Officials Conference, 124 W. 4th St., Los Angeles 13, Calif. $3.75 (paper) plus 25c postage.

ARCHITECTURE PREFABRIQUEE — Second edition. By Pol Abraham. 140 pp. Dunod, 92 Rue Bonaparte, Paris 6, France. Price 960f.

TRAIT D'IRRIGATION—By V. Bauzil. Text, 412 pp; Atlas 8 plates. Published by Eyrolles, 61 Boulevard St. Germain, Paris V, France. Price, 2 Vol., 5,500f.

REPORTS AND PAMPHLETS

RECOMMENDED PRACTICES FOR METALLIZINGS: Part IB—Application of Aluminum and Zinc for Protection of Iron and Steel—(Tentative). American Welding Society, 33 W. 39th St., New York 18, N. Y.

EFFECTS OF TEMPERATURE CHANGES ON CONCRETE AS INFLUENCED BY AGGREGATES—Circular No. 48. National Sand and Gravel Association, 1325 E Street, N. W., Washington 4, D. C.

PROCEEDINGS OF THE KENTUCKY HIGHWAY CONFERENCE—Engineering Experiment Station, University of Kentucky, Lexington, Ky.

THE TWENTY-FIFTH ANNUAL HIGHWAY CONFERENCE—Engineering Experiment Station Circular. University of Colorado, Boulder, Colo.

AIR DIFFUSION IN SEWAGE WORKS—Manual of Practice No. 5, Federation of Sewage and Industrial Wastes Associations, 325 Illinois Bldg., Champaign, Ill. $1.25.

INTERIM GUIDE FOR THE DESIGN OF BUILDINGS EXPOSED TO ATOMIC BLAST—Federal Defense Administration. Superintendent of Documents, Washington 25, D. C. 15 cents.

THE WUNDERLICH CASE: Its Impact Upon the Construction Industry—Educational Department, The Surety Association of America, 60 John St., New York 38, N. Y.

APPRAISAL OF SEVERAL METHODS OF TESTING ASHALTIC CONCRETE—Bulletin 126, Texas Engineering Experiment Station, College Station, Tex.

ZONING AND TRAFFIC—The Eno Foundation for Highway Traffic Control, Saugatuck, Conn.

TRAFFIC RESEARCH PROBLEM STATEMENTS—Special Report No. 3, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. 45 cents.

OFF STREET PARKING: Legislative Trends and Administrative Agencies—Bulletin 48, Highway Research Board, 2101 Constitution Avenue, Washington 25, D. C. 60 cents.

How many different oils and greases do you now carry to keep your earth-moving machinery running?

With Shell's "3-Barrel" plan you need only *three*!*

*SHELL RETINAX A GREASE

. . . a superior new multi-purpose grease for all types of heavy-duty automotive vehicles. Shell Retinax A Grease does the job of four or more specialized greases—yet only one gun is required. Recommended for all grease-lubricated points on chassis, wheel bearings, universal joints, and water pumps, Shell Retinax A gives you better protection against excessive wear and washing out.

*SHELL SPIRAX EP†

. . . an exceptional "alloy type," Extreme Pressure gear oil. Shell Spirax EP is recommended for rear axles of the hypoid, spiral bevel, and spur gear types . . . and heavy-duty transmissions. It is extremely stable . . . has long-lasting anti-rust and film strength properties. Results: longer gear life, lower maintenance costs.

*SHELL ROTELLA OIL

. . . for all engine crankcase lubrication, Shell Rotella Oil is a new, fortified, extra heavy-duty lubricant which has set new standards of anti-wear, anti-fouling performance in high speed diesel and heavy duty gasoline engines. By maintaining clean engines and minimizing sludge formation, piston lacquering, ring and valve sticking, and port clogging, Shell Rotella Oil extends periods between overhauls, reduces parts replacement costs, and gives you reduced oil consumption.

†Some manufacturers recommend a straight mineral oil for gear lubrication. Your Shell Lubrication Engineer will suggest the proper lubricant in such cases.

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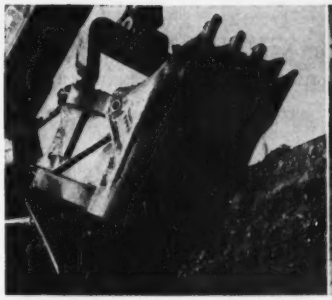
Stoody Alloys save shovel parts!

Hard-Facing restores life at a fraction of new part cost!

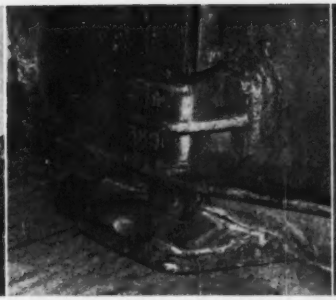
You can get new and longer life from worn shovel parts by hard-facing with Stoody Alloys! Cost of reclamation is far less than for new parts. Regular maintenance procedures thereafter save costly down-time, spare parts inventory and needless replacements.

Check your shovels today against the suggested rebuilding operations pictured at the right. Detailed manual procedures are described in the new revised STOODY GUIDEBOOK. Get it from your Stoody dealer or by mail.

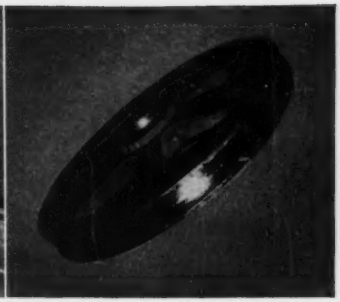
Custom welding shops equipped to handle automatic rebuilding work are located in every section of the United States and Canada. Write for list of shops near you.



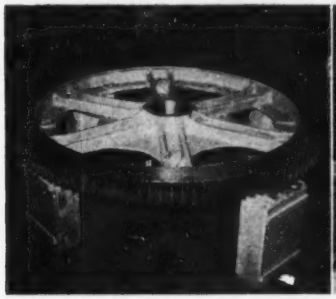
1 BUCKET TEETH, LIPS, SIDES, BOTTOMS
ALLOY: *Stoody Self-Hardening 21 or Stoody 1027.*
APPLICATION: *Manual—stringer beads or solid overlays on wear areas.*
RESULTS: *Maintains size, reduces wear, retains full bite and load.*



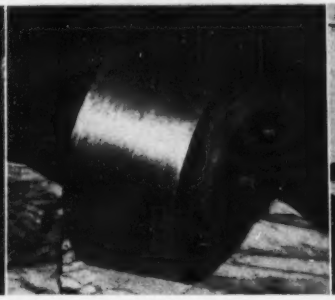
2 LATCH PLATES AND KEEPERS
ALLOY: *Stoody Self-Hardening or Stoody 1027.*
APPLICATION: *Manual—build to size and peen to shape while red hot.*
RESULTS: *Effects positive latch closure. Negligible cost.*



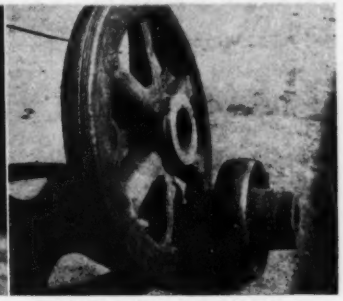
3 SHEAVES
ALLOY: *Stoody 104 or Stoody 107.*
APPLICATION: *By automatic—machinable deposit.*
RESULTS: *Prevents grooving, increases rope life.*



4 HOUSE BASE RINGS
ALLOY: *Build up with Stoody 104, finish with Stoody 107.*
APPLICATION: *By automatic—machinable surface.*
RESULTS: *Reclamation ¼ of new ring cost.*



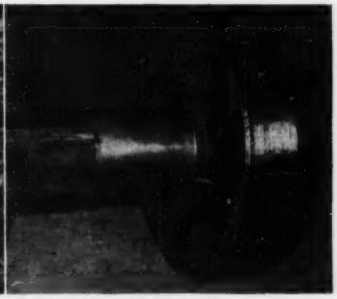
5 HOUSE ROLLERS
ALLOY: *Stoody 107.*
APPLICATION: *By automatic—machinable surface.*
RESULTS: *Restores contour, doubles life at 1/3 the cost.*



6 SHOVEL IDLERS AND ROLLERS
ALLOY: *Stoody 105.*
APPLICATION: *By automatic—no finishing necessary.*
RESULTS: *Restores wearing faces, doubles life at ½ original cost.*

7 TRACK PADS
ALLOY: *Stoody 1027.*
APPLICATION: *Manual—rebuild with Stoody High Carbon, overlay with Stoody 1027.*
RESULTS: *Doubles life at ½ cost.*

8 DRIVING TUMBLERS
ALLOY: *Coated Stoody Self-Hardening or Stoody 1027.*
APPLICATION: *Manual—rebuild drive lugs.*
RESULTS: *Doubles life at ½ original cost.*



9 SWING BRAKE DRUMS
ALLOY: *Stoody 106.*
APPLICATION: *By automatic—machine to finish.*
RESULTS: *Illustrated type reclaimed for 15% of new cost, outlasts new drum.*

See the "yellow pages" in the phone directory for your local Stoody dealer, or write for dealer list and complete literature

STOODY COMPANY

11976 E. SLAUSON AVENUE, WHITTIER, CALIFORNIA

Texas Flange Co.
selected a
STEELCRAFT
RIGID FRAME BUILDING because . . .

"It solved our special problem and gave us more room for overhead crane operation."

Texas Flange Co. needed a building to house their machine shop specializing in the maintenance of heavy duty oil field equipment. A specific requirement was head room to operate a 25 ton overhead crane running the entire length of the building and extending 100 ft. beyond. Working with STEELCRAFT engineers and utilizing Steelcraft mass produced standard building units, Texas Flange Co. secured a quickly erected, permanent building that solved their special problem . . . with a *definite* saving on construction cost and erection time.

For maximum economy and efficiency, call in STEELCRAFT at the earliest possible planning stage. That's when STEELCRAFT engineers can make proper recommendations, complete suggestions, together with preliminary estimates or definite quotations —BEFORE the job starts.

STEELCRAFT'S fully integrated manufacturing operations provide a continuous flow of standard parts, including doors, windows and other primary accessories assuring delivery of the complete building on time...from one source and with one responsibility.

WRITE TODAY . . . USE COUPON BELOW

The Steelcraft Manufacturing Co., Dept. ENR 1152
9017 Blue Ash Road, Rossmoyne, Ohio

☐ Send engineer to survey my building requirements.

☐ Send me information on complete line of Steelcraft Metal Buildings

Name ..... Title

Company .....

Address .....

City ..... Zone... State .....

FREE CATALOG
Write today for complete information on Steelcraft Steel Buildings

STEELCRAFT
MANUFACTURING COMPANY
Rossmoyne, Ohio (In Greater Cincinnati)

MEN AND JOBS

LT. GEN. LEWIS A. PICK will soon be a civilian, after 3½ years as head of engineers.

Pick leaves engineers with successor unnamed

With considerable satisfaction and no regrets, Lt. Gen. Lewis A. Pick will bow out Nov. 30 as Army Chief of Engineers. He looks forward with quiet pleasure to setting up office as a consulting engineer in Auburn, Ala.

Pick's departure from active Army service won't pass without notice. The engineer center at Fort Belvoir, Va., is honoring him Nov. 18 with a review and reception. He reaches statutory retirement age on that date, his 62nd birthday.

There were no doubts about Pick's plans last week, but Washington was still in the dark as to the man who would succeed him. Columnists and commentators had been making some wild guesses, but their predictions were based on nothing better than wishful thinking. So far as the White House could say, President Truman did not know himself whom he would name for Chief of Engineers.

A board of five officers, including Pick, presumably recommended a list of candidates some time ago. Such a list usually contains a minimum of three names. The list goes to Army Secretary Pace for forwarding to the White House.

Engineer officers with the rank of colonel or above are eligible for appointment. Some thirteen or fourteen two-star generals alone had to be con-

(*Continued on page 91*)

ZONED EQUIPMENT:

Modern as the jet field it builds

Jet planes need elbow room. Wherever swept-back jets hurtle into the sky or thunder home to roost, they need plenty of open space. A few miles north of Youngstown, the Air Force has flattened and reshuffled many Ohio acres to give the jets the room they need.

To pave the way for the streaking planes, Allegheny Asphalt & Paving Co., Pittsburgh, excavated 1,300,000 yards, embanking 821,000 yards and relocating 1½ miles of roads. For the jets, this will mean 3,000 more feet of runway, 3,000 extra feet of taxiway.

For the high-speed jets the company used high-speed methods. It employed a fleet of 34 "Caterpillar" Diesel Tractors, four No. 112 Motor Graders, Scrapers, 'Dozers, sheepsfoot tampers and other auxiliary equipment. Why "Caterpillar" products? Because they're designed and built for economical, zoned earthmoving.

Three zones—A big job needs standardized equipment designed for the three principal construction zones. "Caterpillar" offers a line created for this progressive method of construction.

For high speed, long hauls on good haul roads, Allegheny utilized its four DW21 wheel-type Tractors with No. 21 Scrapers and some of its 27 D8 Tractors for push loading.

For the shorter distances and rougher ground of the middle-speed zone, the D8s were hitched to scrapers.

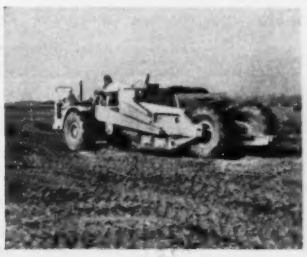
And for the short, rough, important power zone, it had available the D4, D6, D7 and D8 Tractors with 'Dozers.

Helping in all three zones were the four talented No. 112 Motor Graders, maintaining haul roads, ditching, banking and filling. Constantly at work . . . constantly useful.

A fleet of powerful big yellow machines roared over the ground leaving in their wake a Herculean job of earthmoving. Now graceful jets flash into the sky leaving a wispy vapor trail scribbled in the heavens.

Power zone operations by D8s. Foreground, powerful D8 is spreading while in the background a D8 is pulling a sheepsfoot tamper.

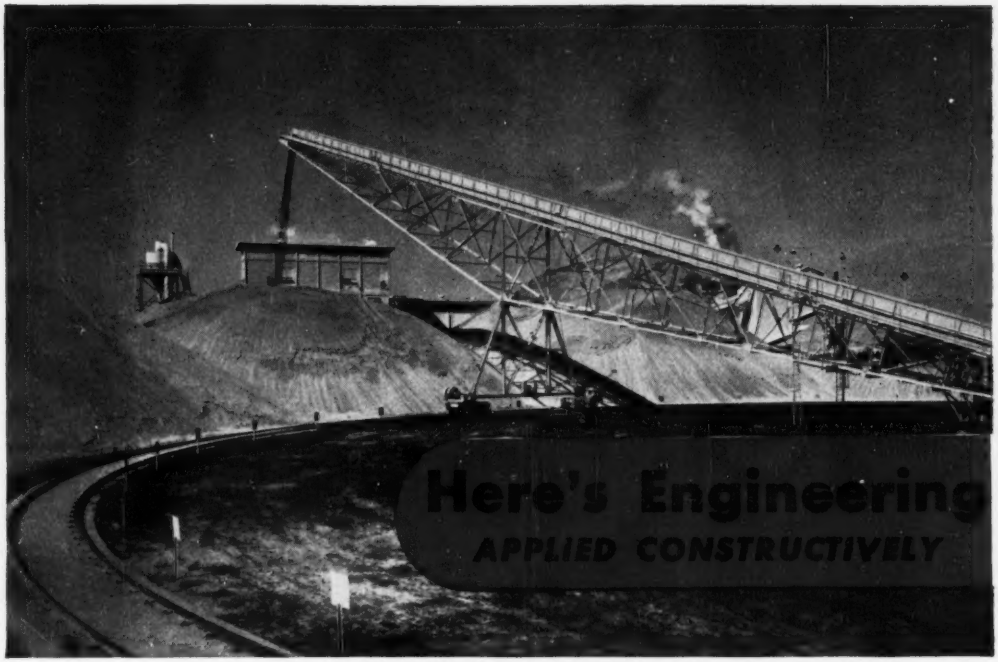
Middle-speed zone operations by D8 and No. 80 Scraper. This unit works quickly and smoothly for shorter haul distances and rougher ground.



High-speed zone operations by a big yellow DW21 with No. 21 Scraper. High speed and big capacity of this unit equip it for this zone.

Versatile No. 112 Motor Graders are helpmates for other "Caterpillar" equipment in all three zones. Here they are spreading on runways.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS



A belt stacker designed by Jeffrey Engineers becomes an important part of a new-type storage system installed in Florida. Result: Continuous, dependable operation and accurate blending.

Saving: A unique system, the facilities of which prevent delay of railroad equipment and provide better service to customers by permitting quicker deliveries of more-accurately-blended phosphate rock.

How it works: From track hopper rock is fed at 600 to 800 T.P.H. on to a Jeffrey 36" belt conveyor, running up an 80-foot high Stacker which pivots (see photo) over a wide semicircle. Rock is dropped on storage piles consisting of various grades at different points. Grades are blended by proportioning through gates and reclaimed by other Jeffrey belts operating in tunnels under piles. Rock can be removed at controlled rate from any point in the pile, or at several points at once.

This is just one of the many Jeffrey-equipped jobs on which our engineers projected an ingenious application of the Belt Stacker. For applied engineering on those tough assignments — call on Jeffrey.

- Car Pullers
- Bucket Elevators
- Grizzlies
- Crushers
- Pulverizers
- Magnetic Separators
- Chains
- Dryers
- Coolers
- Stackers
- Conveyors
- Packers

THE JEFFREY MANUFACTURING COMPANY
923 North Fourth St., Columbus 16, Ohio

1877 75 1952

sidered by the board. One of these major generals will likely fill the vacancy.

Truman is expected to make an interim appointment by Nov. 30. Otherwise, the duties of the office will be carried on by an acting chief appointed by Secretary Pace. A presidential appointee would be subject to confirmation by the Senate after it convenes next January.

• **Career**—During a busy and stormy three and one-half years as Chief of Engineers, Pick has held top responsibility for more than $5.2 billion of Army and Air Force construction. His organization in that period has been subjected to scathing fire from House Appropriations and Senate Preparedness Committees. Despite this caustic criticism, Pick has managed to retain the respect and friendship of most congressmen for Army Engineer operations on both civil and military construction projects.

Pick leaves a number of outstanding monuments to his colorful career with the Army Engineers. Since joining up in the first World War, three years after graduation from Virginia Polytechnic Institute, he has moved up from one tough assignment to another.

Chief among his accomplishments are "Pick's Pike", the Ledo Road in the China-Burma-India theater of the last war, and the Pick-Sloan plan for development of the Missouri River basin. Equally spectacular was his direction of "Operation Snowbound" to relieve four hard-hit states in 1949. He was serving then as Missouri River division engineer, after his return from Asia and before his appointment as Chief of Engineers.

Korean engineers

The Army Engineers School at Fort Belvoir, Va., last week started to train 55 veteran South Korean officers as engineer officers.

The course will be an intensive three week period making use of textbooks and other material translated into the Korean language. A U. S. Army spokesman said that small groups of Koreans previously trained at Fort Belvoir were those who understood English. For the last two months, five Korean interpreters have been rewriting field manuals and training aids to enlarge the number of Koreans capable of receiving instruction. Lectures will be translated on the spot.

(Continued on page 94)

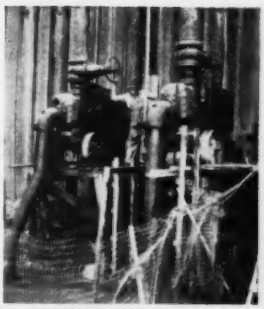
When you're in a hole, you can bet your shirt on Jaeger pumps

On 3 years' pier hole work in the porous gravel of the Scioto and Miami rivers, Visintine & Co., Columbus bridge builders, had 24 months of actual pumping, including 10 months' day and night operation. Their Jaeger Pumps handled it all — and never missed a working day.

Stronger pull at slower speeds gives you more confidence in Jaeger "Sure Prime" Pumps:

Where ordinary pumps run fast to reach capacity and race up to 2000 rpm to prime, Jaeger Pumps deliver full rated volume at an easy 1200 rpm, and sure-prime quickly at no more than 1400.

This easy speed means thousands of hours more life in both pump and engine, no vapor lock on the long, hard pulls, extra performance you can depend on when the chips are down.



2 Pumps Drain 2152' Long Cofferdam: This pair of 10-inch Jaeger portables easily kept the big Cheatham Lock excavation on Cumberland River dry for U. S. Engineers.

See your Jaeger distributor, or send for Catalog P-10

THE JAEGER MACHINE COMPANY

200 Dublin Avenue, Columbus 15, Ohio

COMPRESSORS • MIXERS • TRUCK MIXERS • HOISTS • PAVING MACHINES

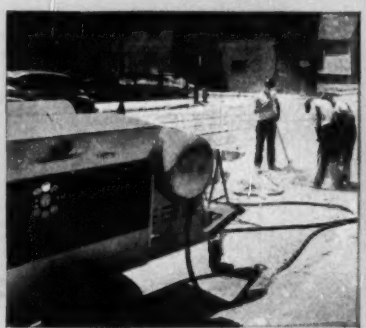
Widest Range

LE ROI

New Le Roi 125 cfm Airmaster at work cutting costs. The two model 52 Le Roi-CLEVELAND breakers get plenty of air, break concrete faster, and reduce the time spent on the job. You save.

THE INDUSTRY'S WIDEST RANGE OF CAPACITIES LETS

New 85 cfm — Perfect as a "one-gun" compressor. Operates heavy breaker and other tools that are too much for 60 cfm units. Here we see one operating the handy 17½-lb. Le Roi-CLEVELAND H-22 sinker.



New 125 cfm — Both gas and diesel models. Ideal for running two heavy breakers, such as these Le Roi-CLEVELAND Model 52's, from one machine. Priced the same as the old 105-cfm gas and diesel units. A low-priced liquid-cooled 105 is still available to meet your needs.

New 185 cfm — Both gas and diesel models. Offers more capacity than a 160-cfm unit, but priced the same as the old 160. Just another example that proves Le Roi gives you more for your money.

# of portable compressors ever offered gives you more for your air-equipment dollars

More sizes to choose from—in the bigger-than-ever LeRoi line

9 SIZES — 13 MODELS

60 cfm gas	210 cfm gas
New! 85 cfm gas	New! 250 cfm diesel
105 cfm gas	New! 365 cfm gas
105 cfm Tractair	New! 365 cfm diesel
New! 125 cfm gas	600 cfm diesel (IHC)
New! 125 cfm diesel	600 cfm diesel (Murphy)
New! 185 cfm gas	600 cfm diesel (Cat)
New! 185 cfm diesel	

NOW you can get more air capacity for less money! Now you can match your job requirements *exactly* with the portable compressor that lets you do the most work at the least cost! For now, thanks to Le Roi's expanded Airmaster compressor line, you have the industry's widest range of sizes to choose from!

The new Airmasters in this famous line fill present-day gaps in your air-power needs. As you know, some of the standards established years ago for air-compressor sizes are inadequate today. Bigger breakers, faster rock drills, air-motor controls, etc., eat up the reserve formerly provided by these ratings.

But you don't have to penalize yourself by working with pressures that are too low — or by operating a machine that's too big and too expensive for the job to be done. You can get a Le Roi that's exactly right for size.

Have your Le Roi distributor show you why you're ahead with an Airmaster *any way you look at it* — for adequate capacity, for minimum investment, for economy, for trouble-free operation, for long operating life. *Write for bulletins.*

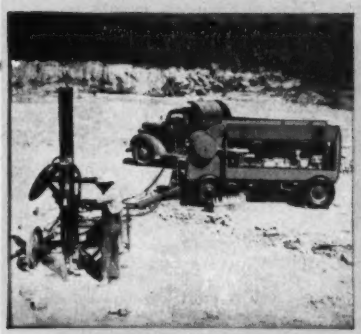
Compressors
Rock Drills
Tractair
Engines . . .

LE ROI COMPANY MILWAUKEE 14, WIS.
Plants: MILWAUKEE • CLEVELAND • GREENWICH, OHIO

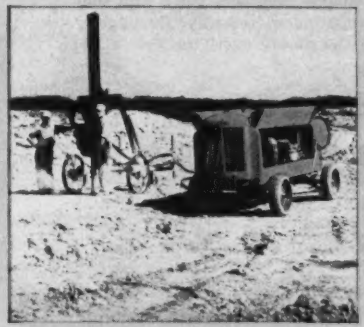
Distributors in all these principal cities

ALABAMA: Birmingham, Mobile — ARIZONA: Phoenix — ARKANSAS: Little Rock — CALIFORNIA: Bakersfield, Long Beach, Los Angeles, San Francisco—COLORADO: Denver, Grand Junction — CONNECTICUT: Hartford — FLORIDA: Jacksonville, Miami, Tampa — GEORGIA: Augusta, Decatur—IDAHO: Boise, Idaho Falls, Twin Falls—ILLINOIS: Chicago—INDIANA: Indianapolis—IOWA: Cedar Rapids, Des Moines, Waterloo—KANSAS: Great Bend, Kansas City, Pratt, Wichita—KENTUCKY: Lexington, Louisville—LOUISIANA: New Orleans, Shreveport — MAINE: Augusta — MARYLAND: Baltimore, Hyattsville — MASSACHUSETTS: Hyde Park, Newton Highlands, Worcester—MICHIGAN: Detroit, Grand Rapids—MINNESOTA: Duluth, Minneapolis — MISSISSIPPI: Jackson — MISSOURI: Joplin, St. Louis — MONTANA: Billings, Great Falls, Kalispell, Missoula — NEBRASKA: Omaha — NEW HAMPSHIRE: Manchester — NEW JERSEY: Cranford, Kingston — NEW MEXICO: Albuquerque — NEW YORK: Albany, Binghamton, Buffalo, Long Island City, Newburgh, Rochester, Saugerties, Syracuse, Whitesboro, Woodside (L.I.) — NORTH CAROLINA: Charlotte — OHIO: Cincinnati, Cleveland, Columbus, Dayton, Toledo — OKLAHOMA: Oklahoma City, Tulsa — OREGON: Portland — PENNSYLVANIA: Bethlehem, Harrisburg, Philadelphia, Pittsburgh — RHODE ISLAND: Providence — SOUTH CAROLINA: Columbia — SOUTH DAKOTA: Rapid City, Sioux Falls — TENNESSEE: Chattanooga, Knoxville, Memphis, Nashville — TEXAS: Dallas, El Paso, Houston, Lubbock, San Antonio — UTAH: Salt Lake City — VIRGINIA: Richmond, Roanoke — WASHINGTON: Seattle, Spokane — WEST VIRGINIA: Clarksburg, South Charleston — WISCONSIN: Milwaukee — WYOMING: Casper

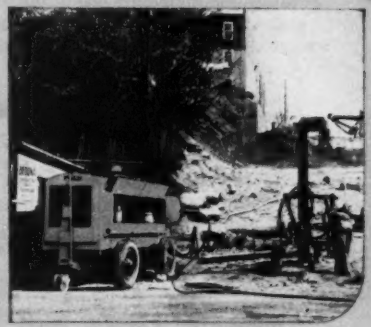
YOU AIR-EQUIP YOUR JOBS FOR GREATEST PROFIT!



New 250 cfm — Diesel-powered. Operates two lightweight wagon drills, like the Le Roi-CLEVELAND DR-34, or one heavy wagon drill, like the Le Roi-CLEVELAND DR-30. Price is same as former 210 diesel.



New 365 cfm — Gas and diesel units replace 315-cfm models. Extra capacity handles many applications that formerly required a 500. Here it runs a Le Roi-CLEVELAND DR-30 wagon drill for deep holes.



600 cfm — These heavy-duty diesel units have plenty of capacity to help you get extra footage from your wagon drills and hand-held tools. The 600 shown here operates two Le Roi-CLEVELAND DR-30 deep-hole wagon drills with plenty of air to spare for other tools.

The U. S. Steel Supply team

that gives you

personalized service

Our *telephone salesman* is your "on-the-spot" assistant!

OUR telephone salesmen are trained to look at your business from *your* viewpoint. They are your "on-the-spot" assistants in our organization. When you want steel or supplies, or need information quickly about availabilities, priorities or prices, pick up your phone and call one of our salesmen. He is in a position to turn your inquiry into immediate action, and to follow it through, if necessary, until you receive the steel or the information you want.

Most of our customers call their telephone salesman, because it suits their convenience to place their orders or inquiries by phone. It gets their steel buying done fast! Whatever your reason for contacting one of our telephone salesmen, you'll find that your business is handled promptly, intelligently, courteously and with the personal interest that marks every member of the U. S. Steel Supply team.

YOUR "ONE CALL" SOURCE OF STEEL SERVICE

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Warehouses and Sales Offices: BALTIMORE · BOSTON · CHICAGO · CLEVELAND · LOS ANGELES · MILWAUKEE
MOLINE, ILL. · NEWARK · PITTSBURGH · PORTLAND, ORE. · ST. LOUIS · TWIN CITY (ST. PAUL)
SAN FRANCISCO · SEATTLE
Sales Offices: INDIANAPOLIS · KANSAS CITY, MO. · PHILADELPHIA · PHOENIX
ROCKFORD, ILL. · SALT LAKE CITY · SOUTH BEND · TOLEDO · TULSA · YOUNGSTOWN

USS

UNITED STATES STEEL

Army Engineers train concrete inspectors

Plans are under way in the Lower Mississippi Valley Division of the Corps of Engineers for the annual training course for concrete inspectors which after three years of development is credited with measurably improving the quality of concrete going into flood control and navigation structures built under the division's supervision.

Established in 1950 by Brig. Gen. Peter A. Feringa, division engineer and also president, Mississippi River Commission, as a supplement to on-the-job training, the course was intended both for new inspectors and to give refresher instruction to the older men. General Feringa made attendance mandatory for each man who performs inspection of any phase of concrete manufacture.

The course consists of a series of lectures and laboratory classes followed by a written examination. Experimentation with the length of the course and the size of classes during the first two years resulted in the 1952 two-week session for new inspectors and a separate one-week session for repeaters. This pattern will be followed in this winter's course.

Texts consist of a mimeographed outline of the several sessions, the ACI Manual of Concrete Inspection and a field edition of the Handbook of Concrete and Cement published by the Waterways Experiment Station. The sessions cover proportioning of concrete mixtures, placement procedures, aggregate sampling and testing and inspection procedures as set forth in the ACI Manual.

Engineer receives $200 for efficiency suggestion

E. Gordon Harris, construction management engineer of the San Antonio sub-office of the Galveston District, Corps of Engineers, recently received a $200 award for making a suggestion that promises to eliminate many manhours of tedious work in the preparation of periodic reports.

The idea is called the "continuous construction inventory control system." It provides an immediate reference regarding procedures, progress control, preparation of forms, percentage of completion and monies alloted and spent.

Col. J. D. Lang, district engineer of the Galveston district, says that although the plan is at present being used only on military construction projects, it is adaptable to civil works.

(*Continued on page 98*)

AND READY FOR ANY JOB

P&H MAGNETORQUE* Electric

Swing is 15% to 25% faster than any 2½ yd. shovel

If it's husky strength you want, this is it! Tough all-welded construction throughout to take pounding and shock loads that would K.O. less rugged machines. It means steady digging — less maintenance — down through the years.

If it's speed, you have it with Magnetorque — speed to out-produce any other machine in the 2½ yd. class — with a swing that's 15% to 25% faster. It's the greatest shovel improvement in 20 years. We'll gladly tell you where to see the 955-A working nearest you. Ask today!

If you want larger capacity, ask for facts about the Model 1055 (3½ yd.).

*T.M. of Harnischfeger Corporation for electro-magnetic type clutch.

HARNISCHFEGER
CORPORATION

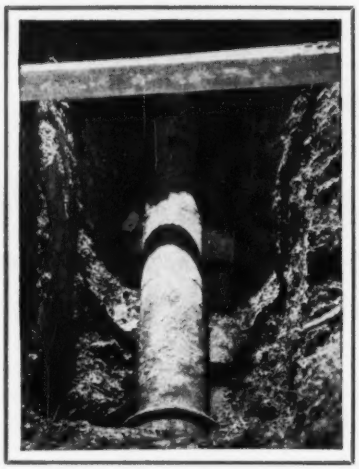
4400 W. National Avenue • Milwaukee 14, Wisconsin

POWER SHOVELS • CRAWLERS AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES

This pipe saves tax dollars

Generations of taxpayers have been saved millions in taxes by the long life of cast iron pipe in America's water distribution systems. For example, more than 35 cities have cast iron mains in service that were installed over a century ago.

Yes, cast iron pipe has saved, and is today saving, millions in tax dollars—but that is not all. Street excavations to replace short-lived pipe cost money in disruption to traffic and retail trade, not to mention the expense of installing new pipe and repairing costly pavement. Cast iron pipe saves these avoidable costs. And the dependable service of cast iron mains in high-pressure fire-fighting systems has saved millions in fire losses. Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 South Michigan Ave., Chicago 3, Illinois.



This cast iron water main installed in Alexandria, Virginia, 100 years ago is still rendering satisfactory service. Over 35 other American cities have century-old cast iron mains in service.

CAST IRON ®

CAST IRON PIPE

America's No.1 Tax Saver

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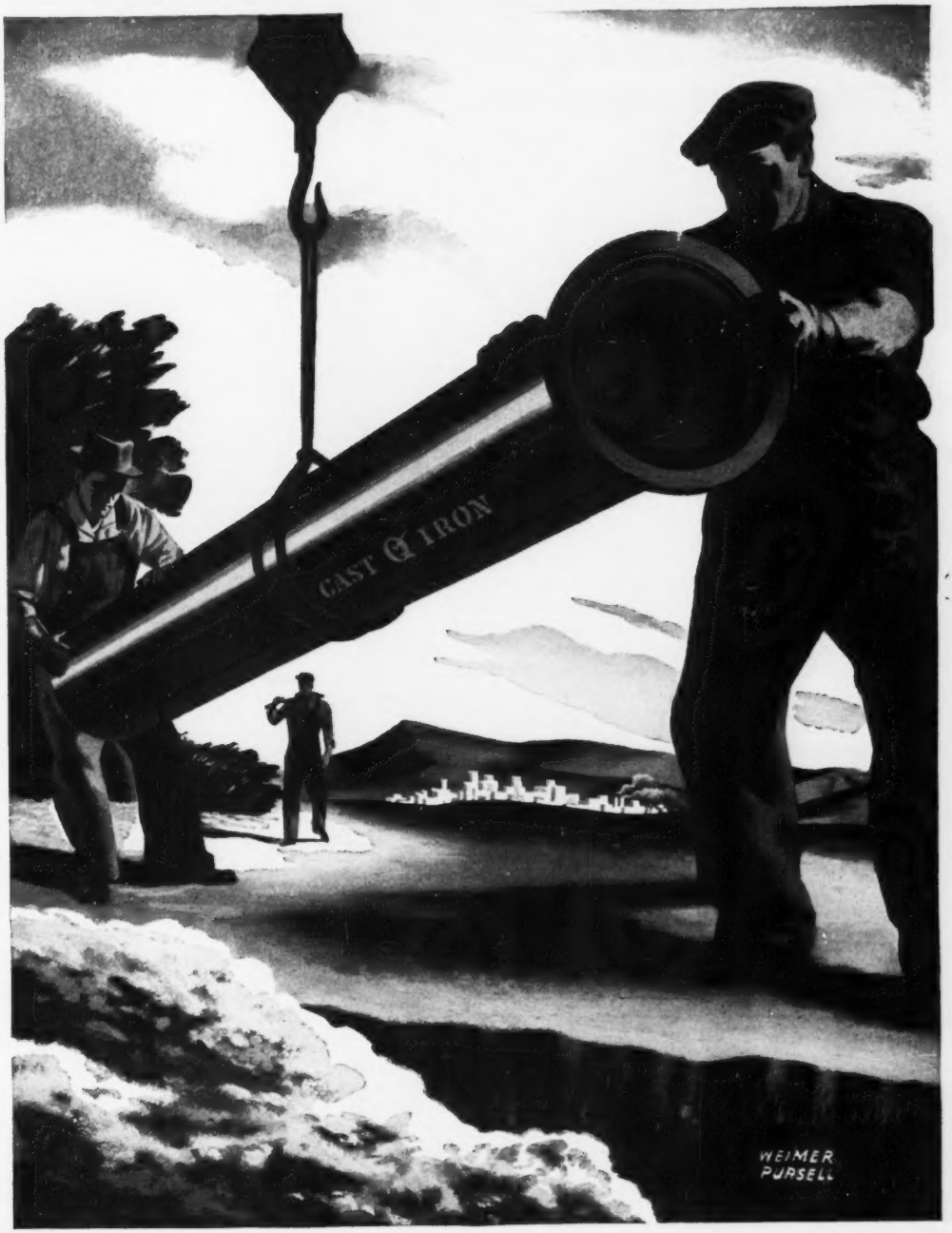
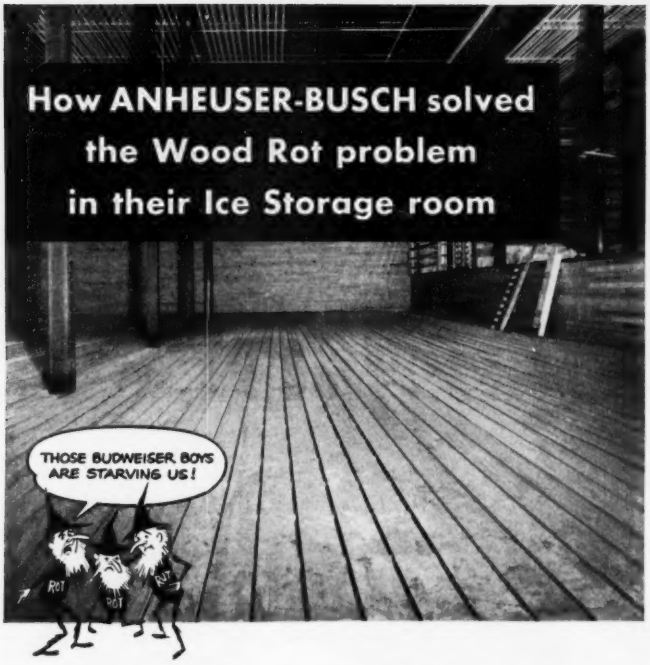
— but that is not all





• In 1937, Anheuser-Busch Incorporated faced a problem common to all companies who operate cold storage rooms. They had to reline an ice storage room with a material which would have the same insulating properties as wood and would resist rotting and deterioration when alternately wet and dry.

So—they lined the entire ice storage room with "Wolmanized"* pressure-treated Southern pine. Now, according to Mr. H. Becke, Plant Refrigeration Engineer, the wood in this ice room is "as good as the day it was put in."

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The ability of Wolman preservative salts to prevent decay or insect attack makes any lumber last longer in the presence of moisture, heat or termites. There are Wolman preservative treatment plants in all parts of the country. For further information, write:

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see our CATALOG in SWEET'S FILE ARCHITECTURAL

Wolmanized PRESSURE TREATED **Lumber**

MEN AND JOBS

Careers . . .

• **Appointed—George S. Richardson,** Pittsburgh, Pa., in addition to carrying on as an individual consulting engineer, has formed a new partnership, Richardson, Morehouse, Ramsey and Fisher, with three of his associates—**James H. Morehouse, Philip B. Ramsey,** and **James C. Fisher.** In new quarters in Gateway Center, the new firm at present is engaged in work for the Ohio Turnpike. Another partnership, Richardson & Gordon, was formed a year ago with headquarters in Philadelphia . . . **Lachlan Macleay,** since 1938 president of the Mississippi Valley Association, has been named vice-chairman of the board. **Everett T. Winter,** former vice-president, was elevated to executive vice-president. **Henry F. DeBardeleben** of Birmingham, Ala., is chairman.

Robert H. Clore, technical service engineer at Chicago, for Universal Atlas Cement Co, was appointed technical service manager, succeeding **O. H. Gosswein** who has retired after more than 35 years with the company. . . Eleven Queens Borough civic associations in New York City, have appointed **George L. Knott,** consulting engineer, to investigate recently-laid $9 million Laurelton sewers.

Roger W. Sheridan has been made president of Metropolitan Engineers, Inc., of Salt Lake City, Utah. The new corporation will specialize in surveying and engineering services for industrial plants, municipal works and utilities. . . Director of the Chicago firm of Midwest Engineering and Technical Services is **A. J. Boulahanis.** The firm will service contractors with quantity surveys, drafting, design and technical illustrations. . . **Jamie S. Carter** and **Jack N. Carter** of Winston-Salem, N. C., have formed Construction Management, Inc., of Winston-Salem.

• **Honored—Otto F. Sieder,** executive vice-president and general manager of the H. K. Ferguson Co., of Cleveland, Ohio, designers and builders of industrial facilities, last week received the honorary degree of doctor of science from Lafayette College at Easton, Pa. . . Building consultant of the Archdiocese of New York, **Thomas A. Kelly,** was given the fourth annual award of the New York Association of Consulting Engineers this week.

• **Retired—R. H. Corey,** Portland, Ore., consulting engineer, has announced his retirement from active practice. His practice is being taken over by Clark & Groff, engineers.

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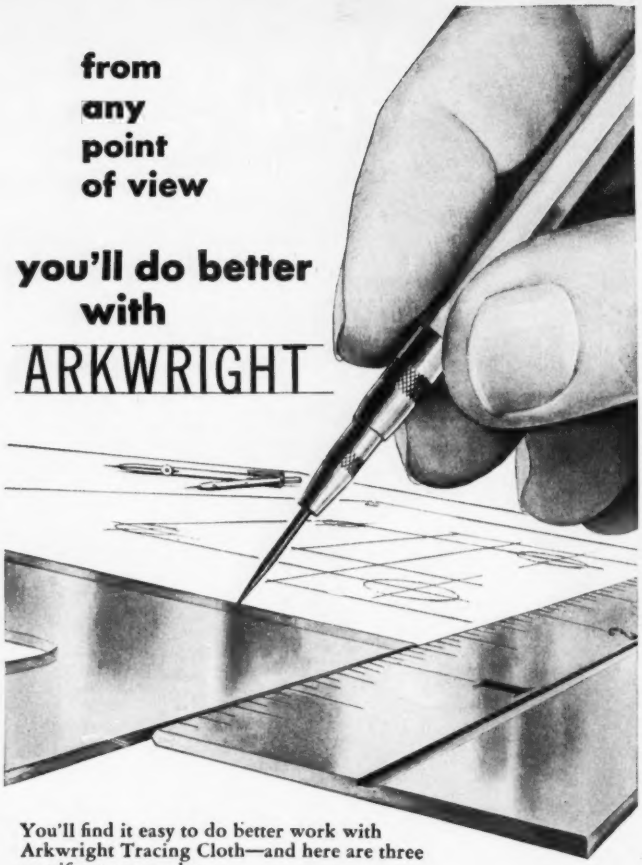

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OBITUARIES

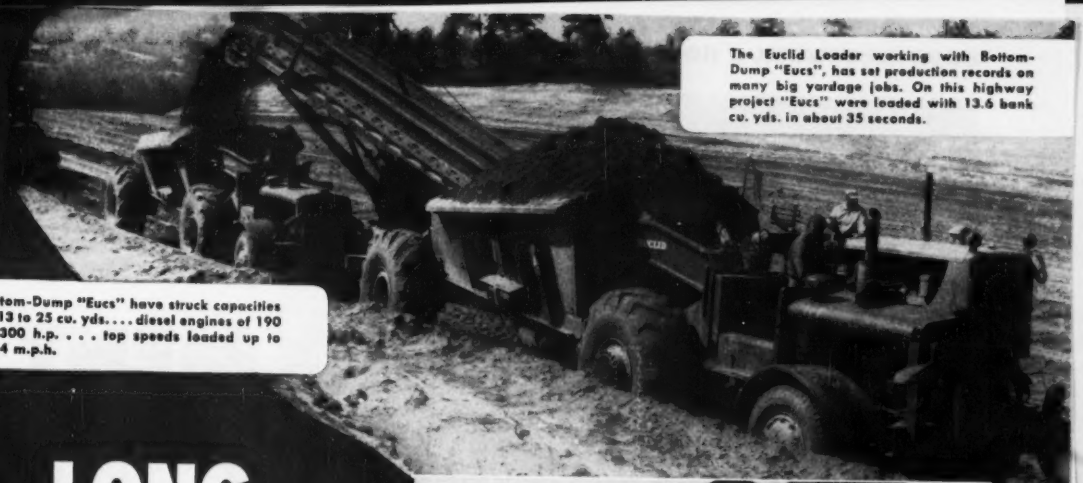
Dexter S. Kimball, 87, former dean of the college of engineering at Cornell University, died at Ithaca, N. Y., Nov. 1. Professor Kimball was graduated from Stanford University in 1896 and joined the Cornell staff two years later. With the exception of the three years from 1901 to 1904, he continued on the faculty until his retirement in 1936. He was a past president of the American Engineering Council and of the American Society for Engineering Education. Mr. Kimball was director of the McGraw-Hill Publishing and Book companies for 18 years. His autobiography is to be published next month by the Book Company under sponsorship of American Society of Mechanical Engineers.

Andrew R. Mulligan, 65, former district engineer at Rochester for the N. Y. State Department of Public Works, died Nov. 1. Early in his career he was on construction of the N. Y. State Barge Canal.

Allan B. Omohundro, 50, of Winston-Salem, N. C., resident engineer for the North Carolina State Highway Department, died Oct. 25. Prior to going to Winston-Salem in December, 1951, he had served as resident engineer for the highway department at Elkin and Franklin, N. C., having been connected with the highway department for 11 years. Before that he was with the U. S. Bureau of Public Roads for 10 years, with the Arkansas Highway Department for three years, and with the Virginia State Highway Department for a number of years.

Gerard Andries de Haseth, 77, retired civil engineer of Tacoma, Wash., died there Oct. 16. Born in Curacao in the Netherlands West Indies, he received his civil engineering degree from the University of Maine, became associated with the Stone & Webster Engineering Corp. in Boston in 1900. He worked with the company through World War I, in many parts of the United States and Puerto Rico.

Robert J. Devenish, 88, retired engineer, died at Denver, Colo., Oct. 21. He was an 1887 graduate of Trinity College, Dublin, and came to the United States in 1888. He was an engineer for the Cincinnati, Ohio, waterworks until 1909, when he moved to Fort Collins, Colo., where he became civil engineer for the Great Western Sugar Co., from which position he retired in 1930.



The Euclid Loader working with Bottom-Dump "Eucs", has set production records on many big yardage jobs. On this highway project "Eucs" were loaded with 13.6 bank cu. yds. in about 35 seconds.

Bottom-Dump "Eucs" have struck capacities of 13 to 25 cu. yds.... diesel engines of 190 to 300 h.p. . . . top speeds loaded up to 34.4 m.p.h.

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● Proof that Euclids are engineered and built for long life performance in off-the-highway service is found in the record—of the thousands built, more than 9 out of 11 "Eucs" are still in use!

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Ask your Euclid Distributor about the Euclid features that mean more loads per hour at more profit per load—large capacity, power and traction for steep grades, and speed on the haul road.

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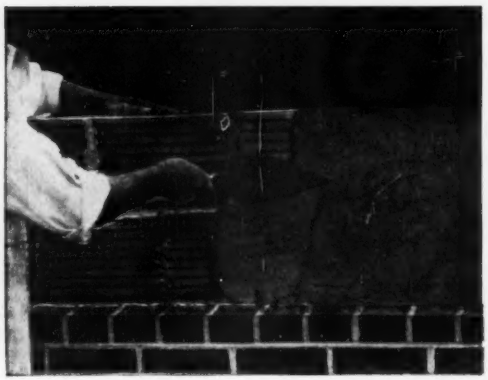
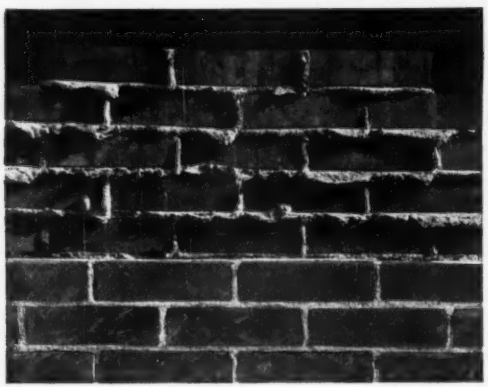
EUCLIDS

The face brick should be backplastered.



If the back-up units are laid first, the front of the back-up units should be plastered.



Backplastering should not be attempted over protruding mortar joints.

PARGING

WITH

BRIXMENT

HELPS ASSURE

DRY WALLS

When a masonry wall leaks, water almost never passes through the masonry units or through the mortar. It works its way through cracks or channels between the masonry units and the mortar.

Most cracks through which water can pass are due to one of two causes — either a good bond was not secured at the time the brick was laid, or the bond was broken after the brick was laid.

In either case, parging provides an effective barrier against the passage of water . . . The face brick should be back-plastered with not less than $\frac{3}{8}$ of an inch of mortar, before the back-up units are laid. Or, if the back-up units are laid first, the front of the back-up units should be plastered with not less than $\frac{3}{8}$ of an inch of mortar, before the face brick are laid.

Dry brick walls are primarily the result of good design and good workmanship. You'll find a wealth of information on how to secure dry brick walls in the Louisville Cement Company's two authoritative booklets, *Type of Workmanship Recommended to Secure Dry Brick Walls* and *Specifications Recommended to Secure Dry Brick Walls.* Write for your free copies of these important booklets, today.

Address:

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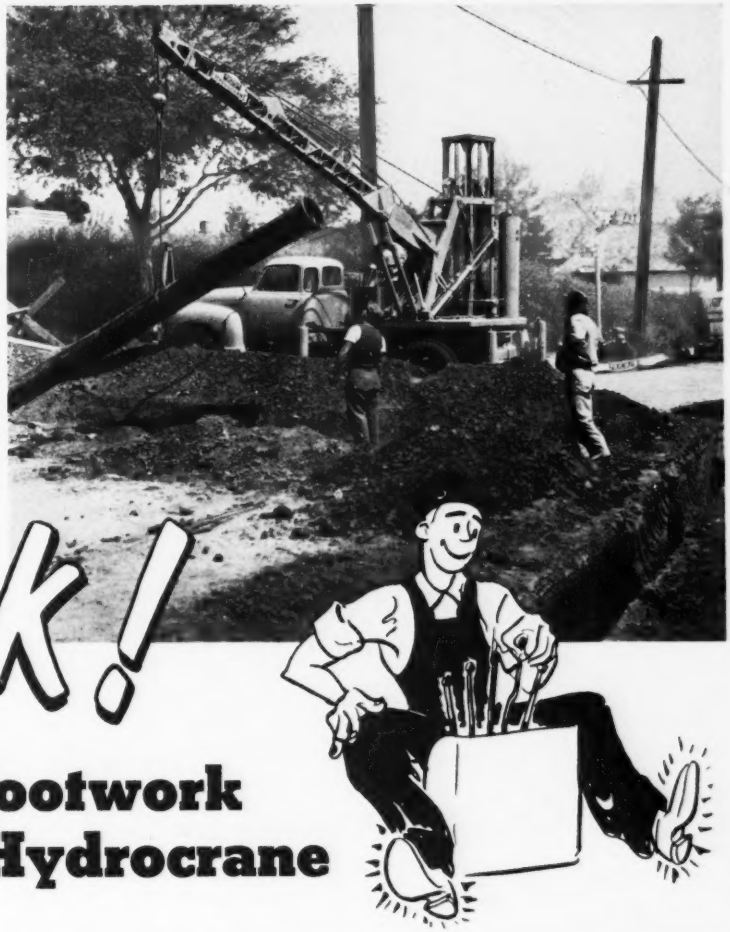
Here the 3-ton Hydrocrane quickly uncovers pipe on an emergency leak repair job. Every crane function fully hydraulic — boom hoist, line hoist, swing, outrigger set and retract, boom telescope and bucket close. Six attachments available plus the HYDROHOE — *a drag-shovel front-end that is quickly and easily attached in the field.*



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no Footwork with a Hydrocrane

That's right. With this all-hydraulic Bucyrus-Erie Hydrocrane, it's strictly a finger-tip, hand-lever operation. No foot controls — no tricky hand-foot co-ordination required. No brakes and clutches that can grab and slip, either. And with liquid-smooth, cushion action hydraulic control, every crane movement is so precise loads can be moved a fraction of an inch at a time if necessary.

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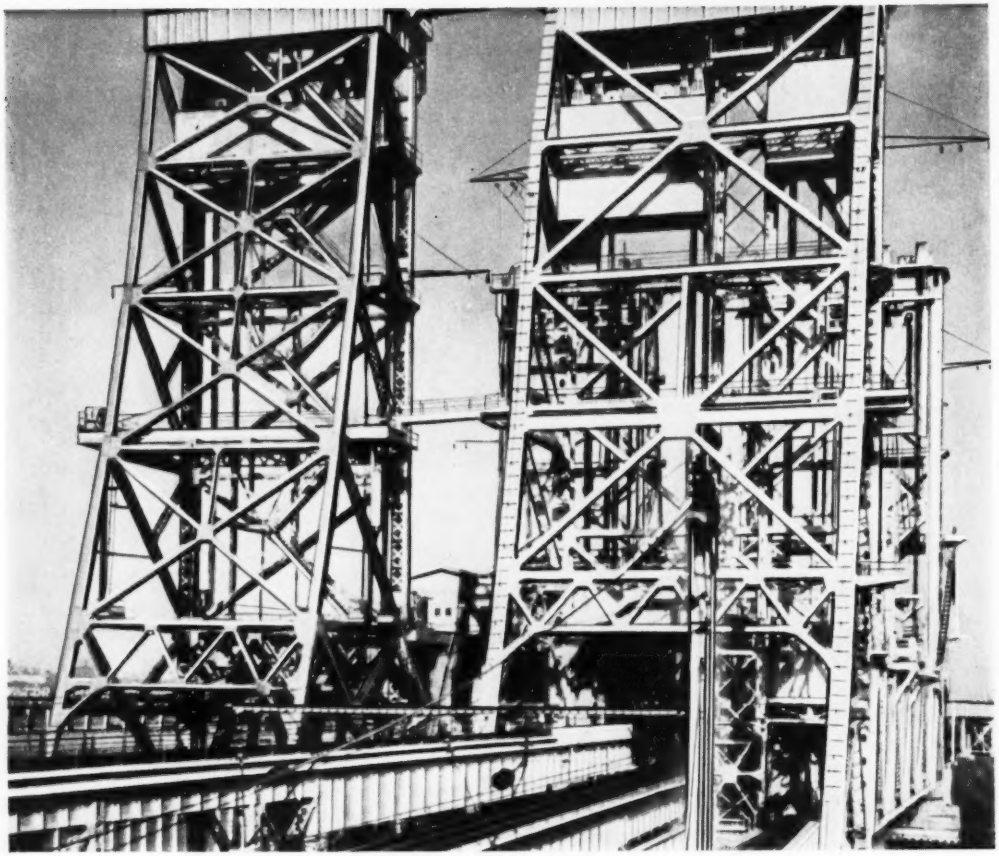

Raising the life span in a lift bridge

To bear the brunt of heavy traffic, the lift span in this bridge must perform reliably, must be tough. And to raise the life span of the entire bridge, there is no tougher, more reliable performance than the kind found in DULUX Metal Protective Paints.

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On exposed steel surfaces, DULUX performance records stand at 10 years, 12 years and even longer periods. The lift bridge pictured above stood fully protected for 15 years before being recoated with DULUX. Service records like this mean substantial savings in maintenance costs.

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How PROSPEROUS Is The USA?

Just how prosperous *are* the people of the United States?

The sole purpose of this message is to help clear up the confusion and controversy that surrounds this important question.

To find out how much prosperity, or material well-being, the people of the United States now enjoy, it is necessary to get answers to these questions:

1. As compared with other times, what is the total amount of goods and services that we have available for our enjoyment?

2. How great, on the average, is the share of each American in this prosperity?

3. How does our prosperity compare with that of other nations?

National Product at Peak

The government statisticians who do the bookkeeping for the nation produce a figure called the Gross National Product. It is supposed to be the total obtained when you multiply the amounts of everything we produce by the prices of everything produced. This year the GNP, as it is commonly tagged, will add up to something like $345 billion.

Since this will be the highest total that GNP has ever attained, some people will acclaim it as evidence that we now are enjoying the greatest prosperity on record.

The GNP, however, is not an accurate yardstick of prosperity. It may go up because of price inflation alone without any increase at all in the output of goods and services. Also the GNP includes very large amounts of goods and services, such as those for the military, which are in fact a result of misfortune rather than of a condition that might properly be called prosperity. Moreover, there is no deduction from the GNP to make allowance for the equipment that is worn out in producing it.

Little Recent Progress

When we make adjustments such as these—to find out how much of our production really is available for the use and enjoyment of the civilian population—the *adjusted* national product since the beginning of World War II comes out about as follows. The effects of price inflation have been removed from these figures.

YEAR	ADJUSTED NATIONAL PRODUCT	
	Billions 1951 Dollars	Index (1946=100)
1940	$176.2	76
1946	232.5	100
1947	240.7	104
1948	244.3	105
1949	239.7	103
1950	260.9	112
1951	267.9	115
1952	264.3	114

From this table the fact stands out that progress in raising our level of prosperity has been halting. What progress we have made came in a few dramatic increases before or after a military build-up. Aside from those, the progress has been fairly slow. This year, 1952, it has been particularly discouraging.

Again, when account is taken of the number of people who must share in the goods and services that are available, our progress is even less marked. This is shown by the following table which gives the share of the average American in the national product. This, as the table indicates, is arrived at simply by dividing the total of available goods and services by the population on hand to share in them.

YEAR	POPULATION Millions	ADJUSTED NATIONAL PRODUCT Billions 1951 Dollars	ADJUSTED NATIONAL PRODUCT Per Person
1940	132.0	$176.2	$1,335
1946	141.3	232.5	1,645
1947	144.0	240.7	1,672
1948	146.6	244.3	1,666
1949	149.2	239.7	1,607
1950	150.6	260.9	1,732
1951	154.4	267.9	1,735
1952	156.9	264.3	1,685

Here it is clear that we have made little or no headway since the end of World War II.

U.S. Compared to Other Nations

Although we are making slow progress in increasing our prosperity, as measured during recent years by the amount of goods per person, we still are by long odds the most prosperous people on earth. This can be seen from the following table. It offers a rough measure of how the adjusted output of goods and services per person in the United States compared in 1951 with that in a number of other countries:

COUNTRY	PER PERSON
United States	$1,735
Canada	1,231
United Kingdom	614
France	510

To figure more closely "How Prosperous is the U.S.A.?" we must answer a number of other questions. One of the most important will be the subject of a later editorial in this series. It is "Who Gets What?" How have various income classes and occupational groups shared the total available goods?

Another question that has a basic bearing on the quality and durability of our prosperity is "How fast are we using up irreplaceable natural resources, such as oil, iron ore, and copper, to sustain it?" Any attempt to deal with this very complicated question must also be deferred.

A Problem for the Future

In the meantime, however, key facts about our prosperity are that:

1. Most of the increase in the nation's total production in recent years has been to meet military requirements rather than to improve the American standard of living.

2. The increase in the supply of goods and services actually available for the average American has been slow and halting.

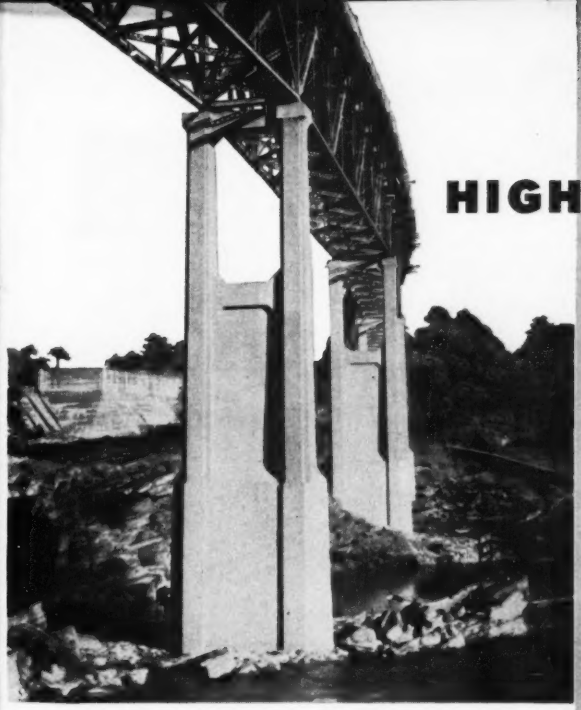
3. We Americans are still extremely well provided with the good material things of life, as compared with peoples in other lands.

These three facts bring to mind a whole series of policy questions. What can be done to speed up progress in improving our prosperity? What—to repeat the question discussed in the previous editorial in this series—can be done to make our prosperity less precarious?

Here, however, the purpose is not to prescribe. It is simply to indicate as accurately as it can be done in a brief article the actual state of the nation's prosperity.

In doing this much, it can properly be remarked that the record presents to the American economy both a problem and an opportunity of surpassing importance. It is that of building a prosperity that will be both more progressive and more secure than any we have known in recent years. In the light of what clearly remains to be done, we shall make a grave mistake if we use up any of our energy in congratulating ourselves on the relatively meager progress here recorded.

McGraw-Hill Publishing Company, Inc.



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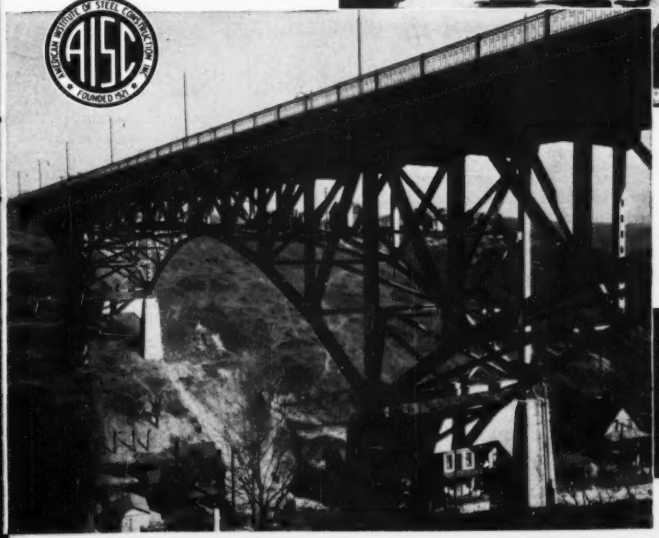
Allegheny County (Pittsburgh), Pa. Dooker's Hollow Bridge. Total length 598'—consisting of two 69' cantilever arms and one 138' suspended span between piers and two 161' anchor spans.



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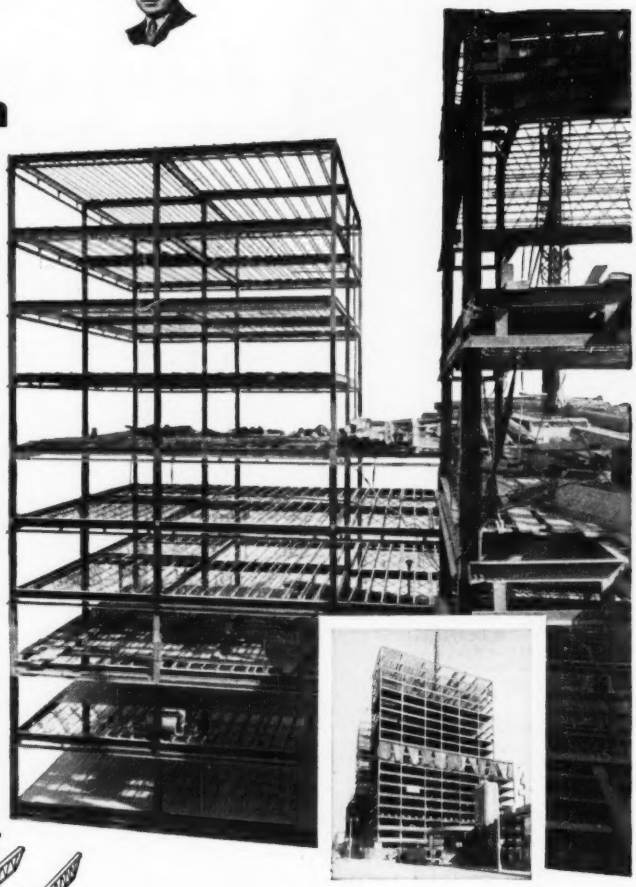

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The new "WS" pipe features all the advantages that have made CARLON the fastest-selling pipe on the market today. It is absolutely guaranteed against rot, rust and electrolytic corrosion, permits fast low-cost installation, and assures trouble-free service life even under the most severe operating conditions.

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1"	1.433	1.070	120	.285	300' "
1¼"	1.830	1.380	120	.477	300' "
1½"	2.260	1.610	120	.61	250' "
2"	2.495	2.070	104	.79	200' "
2½"	2.950	2.470	100	.82	150' "
3"	3.670	3.070	100	1.28	100' "
4"	4.820	4.030	100	2.20	25' straight
6"	7.260	6.070	100	3.00	25' "

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NEW ENGLAND

BIDS ASKED—BUILDINGS

▲† **Mass., Boston**—HOUSING—B.A. 11/21—Boston Housing Auth., 230 Congress St., superstructure 1,428 housing units, Proj. Mass 2-20, Columbia Point, Dorchester. $18,000,000. M. A. Dyer Co., 24 School St., archt. CD 4/2/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **J. R. Ciancette, 120 Main St., Pittsfield, Me., LB. $670,441.** constr. roads, walks, utilities, Limestone Air Force Base, Eng. 19-016-d53-3, LIMESTONE, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Oct. 27. CD 10/13.

BUILDINGS

LOW BIDS AND CONTRACTS

Kelly Corp., 25 Forest St., Arlington, Mass. Owner Builds. Est. **$550,000.** 150 single RESIDENTIAL DEVELOPMENT, HAMPTON, N. H. CD 10/27.

▲† **Farina Bros. Co.,** 429 Watertown St., Newton, Mass. LB. Item 1 **$1,469,183;** Item 2 **$1,454,183,** electric test LABORATORY, Naval Shipyard, Spec. 30306, PORTSMOUTH, N. H. First Naval Dist., 495 Summer St., Boston, Mass. Bids Oct. 28. CD 10/24.

Grande & Son, Inc., 425A Broadway, Everett, Mass. CA. **$839,510** est. $825,000. HIGH SCHOOL, Cudworth Rd., SCITUATE, MASS. Town, Supt. Schools, Cudworth Rd., Scituate, Mass. CD 10/29, under LB.

L. C. Blake, 50 Dyer Ave., Milton, Mass. LB. **$388,562.** Junior High SCHOOL, Bicknell Elementary SCHOOL alterations, North Weymouth, WEYMOUTH, MASS. Town, Bldg. Comm., 89 Middle St., Weymouth, Mass. Bids Oct. 24. CD 10/20.

▲ **Walsh Bros.,** 150 Hampshire St., Cambridge, Mass. CA. Approx. **$1,400,000,** est. $1,000,000. 2 DORMITORIES, WORCESTER, MASS. Holy Cross College, College St., Worcester, Mass. CD 10/20, under LB.

Brooklawn Constr. Co., 254 Prospect Ave., Hartford, Conn., CA. **$300,000,** modernizing STORE, HARTFORD, CONN. J. J. Newbury Co., 845 Main St., Hartford, Conn.

Greene Manor Estates, 33 Sequin Rd., West Hartford, Conn. Owner Builds. **$700,000,** HOMES, Norwood Development "The Pines". Mohawk Dr. and Mohegan Dr., WEST HARTFORD, CONN. CD 9/29.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Del., Dover**—PARKING APRON, etc.—B.A. 12/3—U. S. Eng., 121 N. Broad St., Phila., Pa., aircraft parking apron and taxiways, Eng 36-109-53-10, Dover Air Force Base. $3,000,000. Extended date. Foster Damon & Doane, Inc., du Pont Bldg., Wilmington, Del., and archt. CD 10/22.

▲† **N. J., Lakehurst**—OVERHAUL SHOP, etc.—B.A. 12/15—Dpt. Navy, Phila. Naval Base, Phila., Pa., air ship overhaul shop and altering hangar. $2,500,000. Carroll Grisdale & Van Alen, 204 W. Rittenhouse Sq., Phila., Pa., archts. CD 7/30.

BIDS ASKED—BUILDINGS

† **Md., Edgewood**—BOILER PLANT—B.A. 11/18—U. S. Eng., P.O. Box 1715, Baltimore, Zone 3, Boiler Plant Bldg. 331 addn., steam distr. sys., store tank, paving, site imprvs., Army Chemical Center, $600,000. Plans deposit $5. CD 10/1/51.

Md., Baltimore—SCHOOL—B.A. 11/19—City, Bureau Bldg. Constr., 410 Municipal Bldg., Elmer A. Henderson School Washington, Wolfe, Biddle and Chase Sts., $750,000. Plans deposit $50. Ross, Walton & Hofstetter, 2114 N. Charles St., archts. CD 10/15.

Pa., Alverton—SCHOOL—B.A. 11/19—East Huntington Twp. School Dist., Alverton, 1 story, 60x329 ft., brick, block, steel grade school, Rte. 119. $300,000. Plans deposit $25. Joseph Hoover, 333 Blvd. of Allies, Pittsburgh, archt. CD 4/21.

N. Y., Sonyea—HAY STORAGE—B.A. 11/20—Bureau Contracts & Accounts, Alfred E. Smith State Office Bldg., Albany, steel hay storage bldg. at Craig Colony. Plans deposit $5. CD 7/11/45.

▲ **Pa., Uniontown**—HOUSING—B.A. 11/26—Fayette County Housing Auth., Uniontown, 15 two story concrete block buildings, Proj. 15-7R, Redstone Twp., near here. $1,000,000. Altman & Altman, 206 Derrick Ave., archts. CD 5/27.

▲ **N. Y., New York**—SCHOOL—B.A. 12/1—Co-ordinator of School Constr., 49 Flatbush Ave. exten. Brooklyn, Zone 1, general constr., plumbing and drainage; heating and ventilating; electrical work and lighting fixtures for P.S. 191, Amsterdam Ave., 60 and 61 Sts., Manhattan Boro. Est. $1,696,035. Plans deposit $26 general constr., $7 each mech. CD 8/4.

▲ **N. Y., New York**—SCHOOL—B.A. 12/2—Co-ordinator of School Constr., 49 Flatbush Ave. ext. in Brooklyn, Zone 1, general constr., plumbing and drainage; heating and ventilating; electrical work and lighting fixtures for new P. S. 156, 156 St. and 8th Ave., Manhattan Boro. Est. $1,100,000. Plans deposit $16 general constr. $7 each plumbing and drainage; heating and ventilating, $9 electrical work and lighting fixtures.

▲ **N. Y., New York**—SCHOOL—B.A. 12/3—Co-ordinator School Constr., 49 Flatbush Ave. ext. in Brooklyn, Zone 1, general constr., plumbing and drainage; heating and ventilating, electrical work and lighting fixtures for new P. S. 2, Fulton Ave. and E. 170 St., Bronx Boro. Est. $1,837,380. Plans deposit $20 general constr., $8 each mechanical. CD 1/21/44.

† **Pa., Phoenixville**—CHAPEL—B.A. On Or About 12/10—U.S. Eng., 121 N. Broad St., Phila., Zone 1, reconstruct post chapel (Bldg. 11), Valley Forge General Hospital, Inv. No. Eng 36-109-53-184. Plans deposit $5.

† **Pa., Phila.**—SHOP, etc.—B.A. 12/15—Dpt. Navy, Phila., Naval Base, Phila., submarine battery charge facilities and assembly shop in Building 51, Naval Shipyard. $750,000. Pierce Management and Von Storch, Evans, Scandale & Burkavage, Waverly, Pa., engrs. and archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany,

White Oak Excavators, Inc., Plainville, Conn., LB. **$926,957,** est. $989,000, Mendans-Troy Bridge 1.67 mi. Loudonville-Menands, S.H. 1879, FARC. 52-90, FASH. 52-13, Albany Co.;

"Les" Strong Constr. Co., Whitney Point, N. Y., LB. **$128,950,** est. $154,000, 2 bridges Rt. 38 at Dryden, 0.3 mi. approaches, Dryden-Hartford S.H. 8016, FARC. 52-100, Tompkins Co. Bids Oct. 30. CD 10/8.

▲ **NEW YORK**—Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany,

The Savin Constr. Corp., 10 Village St., East Hartford, Conn., LB. **$3,365,123,** est. $4,042,000, 5.00 Thy.-4.1 acc. mi., New York State Thruway, Mohawk Section—Sub. 3 & 4 (Canastota-Vernon Sta.): City of Oneida; North South Artery: Oneida-South Bay Pt. 1, SH 1110 Oneida-Verona, SH 5558: Verona-Rome SH 5521 M.T. 52-14, MTC. 52-15, STC. 52-27, RC. 52-108, Madison and Oneida Counties; LB. **$4,641,566,** est. $5,270,000. 6 mi. Thruway 2.2 acc. mi., New York State Thruway-Catskill Section—Sub. 6 (Greene Co. L-Rte. 9W): Coxsackie-Ravena Pt. 1 S.H. 5198; New Baltimore Station-Coeymans, S.H. 1348; 5 access roads to S.H. 1348 and SH 5198, C.T. 52-7, S.T. 52-25, R.C. 52-105, Greene Co.;

Del Balso Constr. Corp., 500 Zerega Ave., New York, 61, N. Y. LB, **$4,300,142,** est. $4,726,000, 2.89 mi. Bronx River Parkway (lower Sect. Pt. 1 and 2) Cross County Parkway, FABRP. 52-1, FACCP-52-1, West and Bronx Counties;

Rhodes Constr. Co., Inc., 833 Front Ave., Salamanca, N. Y., LB, **$425,765,** 1.43 mi. Persons Croners-Bennington Pts. 2 and 1, Cowlesville-Bennington S.H. 9041 FAS. SH. 52-15, FAS. SH. 52-16P, FARC. 52-101, Wyoming Co.;

Arute Bros., Inc., 560 S. Main St., New Britain, Conn., LB, **$5,446,552,** est. $6,433,000, 11.05 mi. and 2.68 mi. access roads, New York State Thruway, Mohawk Section—Sub. 6 and 7 (Lowell-Whitesboro) Various County and Town Roads, Kirland-Rome SH. 8246, M.T. 52-12, S.T. 52-26, R.C. 52-106, Oneida Co.;

DePew Paving Co., Inc., & McLain Constr. Corp., 4955 Broadway, Depew, N. Y., LB, **$2,346,248,** est. $2,697,000, 1.11 mi. thruway and 4.64 mi. access mi., New York State Thruway, Ontario Section—Sub. 12 (Cleveland Dr.-Union Rd.); Interchange to Main St. Connection; Wherle Dr., Forest Rd.; Union Rd., S.H. 9215, O.T. 52-15, S.T. 52-24, R.C. 52-104, Erie Co.;

Kenn Constr. Corp., North Tonawanda, N. Y., LB, **$467,822,** est. $504,000, 2.93 mi. Walden Ave.-Ellicott Rd., C.R. 318, FASS. 52-133, Erie Co. Bids Oct. 30. CD 10/8.

† **City Constr. Co.,** 640 Jay St., Utica, N. Y., CA. **$113,577.** sanitary sewage expansion at Griffiss Air Force Base, ROME, N. Y. U. S. Eng., 80 Lafayette St., New York, 13, N. Y. Bids Oct. 16. CD 9/18.

Turbine Equipment Co., 75 West St., New York 6, N. Y. LB **$42,370,** Contr. 413, furnishing, testing, del. pumps, electric motors and appurtenances for Neversink Intake Chamber, Downsville Release Water Chamber and intake and outlet chambers of East Delaware Tunnel of Delaware System, NEW YORK, N. Y. Bd. Water Supply, 120 Wall St., New York, N. Y. Bids Oct. 28. CD 10/3.

† **Robert E. Lamb & Son, Inc.,** 3429 W. Indian Ave., Phila., Pa., LB, **$576,430,** boiler plant, electric substations and site imprvs., Inv ENG 36-109-53-12, FORT DIX, N. J. U. S. Eng., 121 N. Broad St., Phila., Pa. Bids Oct. 23. CD 9/9.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comm., 11 N. 4 St., Harrisburg,

George M. Brewster & Son, Inc., 275 W. Fort Lee Rd., Bogota, N. J., LB, **$1,680,930,** constr. structures, grading, drainage, paving 1.72 mi. Sect. 32 A, 1st section of Delaware River Exten., from King of Prussia to Delaware River, Montgomery Co. Bids Oct. 30. CD 1/13.

Sanctis Constr. Co., 1029 McCartney St., Pittsburgh, Pa., CA. Approx. **$175,000.** 1 story, 35x48 ft., brick water filtration plant addn., ELIZABETH, PA. Monongahela Valley Water Corp., Elizabeth, Pa.

▲ **MARYLAND**—State Rds. Comm., 108 E. Lexington St., Baltimore, Zone 2,

Nello L. Teer Co., Box 1131, Durham, N. C. CA **$1,657,587.** grading, drainage, resurf. 3.71 mi. Westminster By-Pass, Contr. C1 303-2-715, Carroll Co. Former contract rescinded. CD 10/7 under CA.

E. L. Wheeler, 452 N. 55 St., Miami, Fla. LB. **$71,987.** clearing reservoir site, 164 acres, on Patuxent River, near Laurel, HYATTSVILLE, MD. Washington Sanitary Comn., 4017 Hamilton St., Hyattsville, Md. J. R. Hall, c/o owner, engr.

DELAWARE—State Hy. Dpt., Dover.

Wilson Contg. Co., New Castle, Del., LB, **$543,930.** c. conc. wid'n., hot mix asph. resurf., c. conc. 7.388 mi. Middletown to Summit Bridge, Contr. 1160, New Castle Co. Bids Oct. 29. CD 10/1.

▲† **Lycoming Constr. Co., Inc.,** 127 Susquehanna Ave., Williamsport, Pa., CA. **$1,460,000,** base supply warehouse and air freight terminal, Dover Air Force Base, DOVER, DEL. U. S. Eng., 121 N. Broad St., Phila., Pa. Bids Oct. 10 CD 10/23, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Lorraine Estates Homes,** c/o Matern & York, archts, 90-04 161 St., Jamaica, N. Y. Owner Builds. **$1,500,000.** 120 HOUSES on 45-acre tract at East Pulaski and Lenox Rds., HUNTINGTON, N. Y.

▲ **Oakwood Estates Homes,** c/o Stanley H. Klein, archt., 89-31, 161 St., Jamaica, N. Y. Owner Builds. **$2,000,000.** 157 HOUSES on 52-acre tract on Jericho Turnpike, west of Rte. 106, JERICHO, N. Y.

▲ **H-M-C Corp.,** Menands, N. Y. Own Forces. **$4,000,000.** 3 story, 300x300 ft., steel concrete OFFICE bldg. for State of New York, MENANDS, N. Y.

Heftler Constr. Co., 589 Central Ave., East Orange, N. J. CA **$819,000,** foundations, general constr., incl. street and yard imprvs., for six 2-story frame, brick veneered row-house groups, John T. Kenny APARTMENTS, S. William St., Walsh's Rd., Dickson St. and lands of the New York State Armory, NEWBURGH, N. Y. Newburgh Housing Auth., Newburgh, N. Y.

▲ **Monterrey Homes,** c/o Henry Moger, archt., 250 Main St., White Plains, N. Y. Owner Builds. Approx. **$2,750,000.** 150 HOUSES on 45-acre tract, east side of Wilmot Rd., NEW ROCHELLE, N. Y.

(Continued on page 112)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Secondary roads in Ionia County, Michigan, are among the finest in the country. Back of these roads is the experienced and expert supervision of Allen M. Williams, right, County Road Engineer and Superintendent, shown here with Howard M. Rotrock, Standard Asphalt Engineer.

First choice for secondary roads

More and more alert road builders, in the Midwest, are utilizing the benefits offered by Standard Oil's improved Road Oils to build better secondary roads at lower cost.

Through the use of these road oils, road builders gain a flexibility that is invaluable to good secondary road construction. Because Standard road oils do not harden excessively, roads laid with these oils can be reworked easily when necessary.

To help road builders in their work of developing better secondary roads, Standard Oil has improved its road oils to provide better coating of aggregate, greater binding quality, faster setting, and blacker appearance. That means longer-lasting, better-looking secondary roads can be constructed in less time and at lower cost.

From any of Standard's four great refineries located throughout the Midwest, road oils and asphalt can be delivered promptly to your road-building job. You'll find a Standard Oil Asphalt Representative in your section of the Midwest. He's available and ready to help you at all times. You can contact him easily by phoning your local Standard Oil (Indiana) office. Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL

ROAD OILS

STANDARD OIL COMPANY (STANDARD) *(Indiana)*

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

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† **Robert E. Lamb & Son, Inc.**, 3429 W. Indian Ave., Phila., Pa., LB, $576,430, boiler plant, electric substations and site imprvs., Inv ENG 36-109-53-12, FORT DIX, N. J. U. S. Eng., 121 N. Broad St., Phila, Pa. Bids Oct. 23. CD 9/9.
▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
George M. Brewster & Son, Inc., 275 W. Fort Lee Rd., Bogota, N. J., LB, $1,680,930, constr. structures, grading, drainage, paving 1.72 mi. Sect. 32 A, 1st section of Delaware River Exten., from King of Prussia to Delaware River, Montgomery Co. Bids Oct. 30. CD 1/13.
Sanctis Constr. Co., 1029 McCartney St., Pittsburgh, Pa., CA. Approx. $175,000. 1 story, 35x48 ft., brick water filtration plant addn., ELIZABETH, PA. Monongahela Valley Water Corp., Elizabeth, Pa.
▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Nello L. Teer Co., Box 1131, Durham, N. C. CA $1,657,587. grading, drainage, resurf. 3.71 mi. Westminster By-Pass, Contr. C1 303-2-715, Carroll Co. Former contract rescinded. CD 10/7 under CA.
E. L. Wheeler, 452 N. 55 St., Miami, Fla. LB. $71,987. clearing reservoir site, 164 acres, on Patuxent River, near Laurel, HYATTSVILLE, MD. Washington Sanitary Comn., 4017 Hamilton St., Hyattsville, Md. J. R. Hall, c/o owner, engr.
DELAWARE—State Hy. Dpt., Dover,
Wilson Contr. Co., New Castle, Del., LB. $543,930. c. conc. wid'n., hot mix asph. resurf., c. conc. 7.388 mi. Middletown to Summit Bridge, Contr. 1160, New Castle Co. Bids Oct. 29. CD 10/1.
▲† **Lycoming Constr. Co., Inc.**, 127 Susquehanna Ave., Williamsport, Pa., CA. $1,460,000, base supply warehouse and air freight terminal, Dover Air Force Base, DOVER, DEL. U. S. Eng., 121 N. Broad St., Phila., Pa. Bids Oct. 10 CD 10/23, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Lorraine Estates Homes**, c/o Matern & York, archts, 90-04 161 St., Jamaica, N. Y. Owner Builds. $1,500,000. 120 HOUSES on 45-acre tract at East Pulaski and Lenox Rds., HUNTINGTON, N. Y.
▲ **Oakwood Estates Homes**, c/o Stanley H. Klein, archt., 89-31, 161 St., Jamaica, N. Y. Owner Builds. $2,000,000. 157 HOUSES on 52-acre tract on Jericho Turnpike, west of Rte. 106, JERICHO, N. Y.
▲ **H-M-C Corp.**, Menands, N. Y. Own Forces. $4,000,000. 3 story, 300x300 ft. steel concrete OFFICE bldg. for State of New York, MENANDS, N. Y.
Heftler Constr. Co., 589 Central Ave., East Orange, N. J. CA $819,000, foundations, general constr., incl. street and yard imprvs., for six 2-story frame, brick veneered row-house groups, John T. Kenny APARTMENTS, S. William St., Walsh's Rd., Dickson St. and lands of the New York State Armory, NEWBURGH, N. Y. Newburgh Housing Auth., Newburgh, N. Y.
▲ **Monterrey Homes**, c/o Henry Moger, archt., 250 Main St., White Plains, N. Y. Owner Builds. Approx. $2,750,000. 150 HOUSES on 45-acre tract, east side of Wilmot Rd., NEW ROCHELLE, N. Y.

(Continued on page 112)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

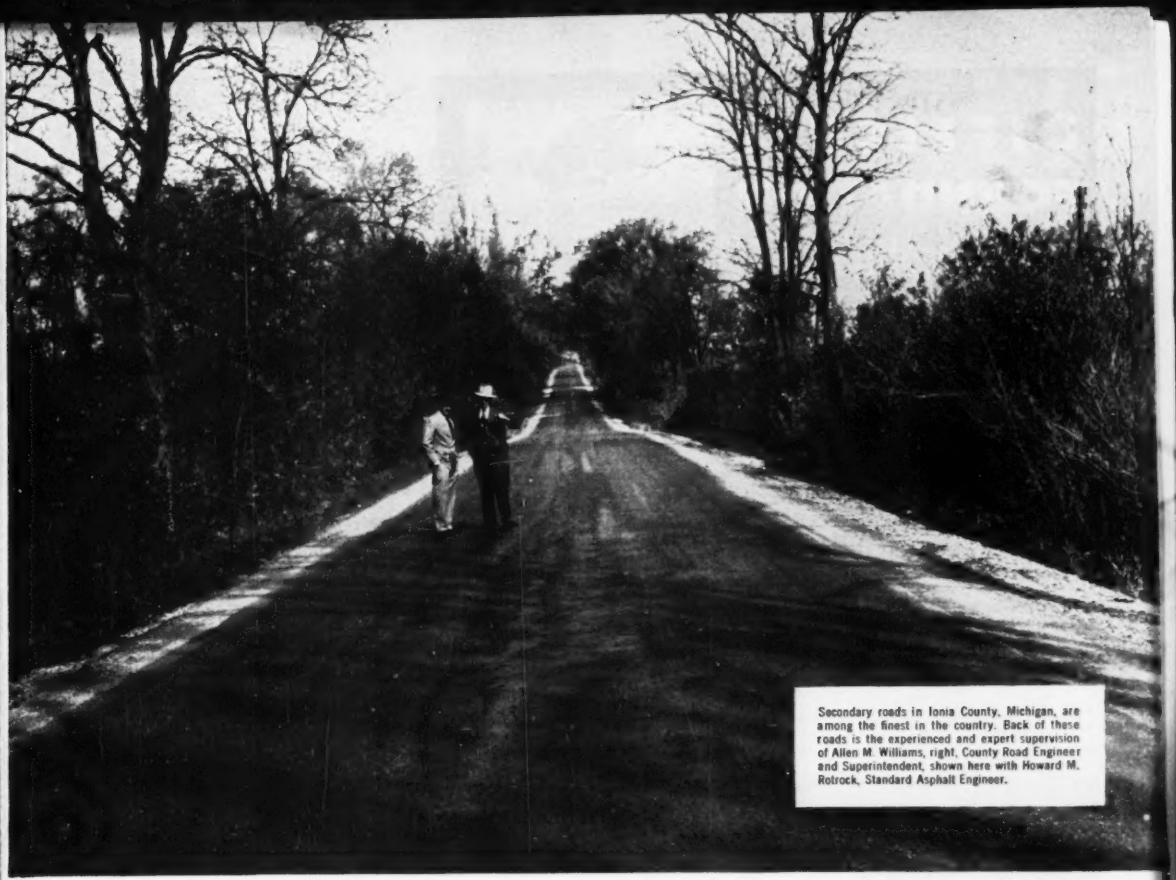
LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects inviolved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily



Secondary roads in Ionia County, Michigan, are among the finest in the country. Back of these roads is the experienced and expert supervision of Allen M. Williams, right, County Road Engineer and Superintendent, shown here with Howard M. Rotrock, Standard Asphalt Engineer.

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Indiana

(Continued from page 110)

Link-Belt Co., 233 Broadway, New York 7, N. Y. CA $923,000, coal and ash conveying equip.;

McKiernan-Terry Corp., 15 Park Row, New York 7, N. Y. CA $1,568,000, two movable coal unloading towers both at 74th St. IRT POWER PLANT, NEW YORK, N. Y. Bd. Transportation, 370 Jay St., Brooklyn 1, N. Y.

▲ **George A. Fuller Co.**, 597 Madison Ave., New York 22, N. Y. CA $5,900,000 20 story OFFICE bldg., at Park Ave. and 57 St., NEW YORK, N. Y. Davies Building, Inc., c/o contractor, Kahn & Jacobs, 2 Park Ave., New York 16, N. Y., archts.

Independent Builders, Inc., c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. Approx. $300,000. 25 HOUSES, 171 St. between Foch Blvd. and 116 Ave., ST. ALBANS, N. Y.

▲ **Westbury-on-The-Green Homes**, c/o Stanley H. Klein, archt., 89-31, 161 St., Jamaica, N. Y. Owner Builds. $1,000,000. 78 HOUSES on 22-acre site on Jericho Turnpike, east of Guinea Woods Rd., WESTBURY, N. Y.

▲ **Syosset Gardens Homes**, c/o Stanley H. Klein, archt., 89-31, 161 St., Jamaica, N. Y. Owner Builds. $1,-250,000. 92 HOUSES on 25 acre tract at Burke Lane and Jericho Turnpike, SYOSSET, N. Y.

▲ **Rolling Hills Homes**, c/o Rudolph L. Novak, archt., 713 Main Ave., Clifton, N. J., Owner Builds. $1,850,-000, 115 HOUSES on 37-acre tract bounded by Harristown Rd., Thurston Terrace and Cranford Rd, GLEN ROCK, N. J.

Mellon Stuart Co., 210 E. Parkway, Pittsburgh, Pa., and **Branna Constr. Corp.**, Bessemer Bldg., Pittsburgh, Pa., LB $362,000. 4 story bsmnt., concrete, steel, brick HOSPITAL addn., CANONSBURG, PA. Canonsburg General Hospital, Canonsburg, Pa. Bids Oct. 17. CD 10/2.

Navarro Corp., 6219 Broad St., Pittsburgh, Pa., LB Approx. $500,000. 1 story, 121x285., steel, brock, block SERVICE CENTER, MOLLENAUR, PA. Manufacturers Light & Heat Co., Union Trust Bldg., Pittsburg, Pa. CD 5/27.

▲ **Crump, Inc.**, 4031 Bigelow Blvd., Pittsburgh, Pa., LB $1,055,000. 20 bldgs., 150-families, 84x25 ft., 25x103 ft., 25x139 ft., 26x185 ft., APARTMENT type, MORGAN, PA. Allegheny County Housing Auth., County Office Bldg., Pittsburgh, Pa. Bids Oct. 24. CD 10/9.

Wark & Co., 1920 Sansom St., Phila. 3, Pa., LB $576,-000, est. $600,000, renovating Building 6 at Norristown State HOSPITAL, NORRISTOWN, PA. State Dpt. Property & Supplies, 319 N. Front St., Harrisburg, Pa. Bids Oct. 29. CD 10/6.

Potteiger Co., Inc., 328 Tulpehocken Ave., West Reading, Pa., CA, $519,813 general contract food service bldg. and necessary paving at HOSPITAL, WEST READING, PA. Reading Hospital, 6 and Spruce Sts., Reading, Pa. CD 10/29, under LB.

▲ **Stehle & Beans**, Bell Grove Rd., Annapolis, Md. LB $1,143,380. Annapolis Emergency HOSPITAL, Annapolis, Md. Anne Arundel General Hospital, Annapolis, Md. Bids Oct. 29. CD 10/13.

▲ **Algernon Blair**, Box 749, Montgomery, Ala., CA $1,500,000, 200 HOUSING UNITS, WASH., D. C. Group Housing, Inc., c/o contractor.

▲ **J. A. Bader & Co., Inc.**, 923 Market St., Wilmington, Del., CA, $3,500,000, HOSPITAL addns., alterations to present facilities, WILMINGTON, DEL. Memorial Hospital of Wilmington, 1501 Van Buren St., Wilmington, Del. CD 8/6/51.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **North Carolina**—RAILROAD—B.A. 11/18—U. S. Eng., 308 Customhouse, Wilmington, access railroad, approx. 204,000 cu. yd. excav., 196,000 tons ballast, 129,391 ft. track, piling, drainage and other work, near Leland, Wilmington Ammunition Loading Terminal, Roberts & Co., 96 Poplar St. N.W., Atlanta, Ga., engrs. CD 3/5.

La., Vidalia—B.A. 11/26—Concordia Parish Police Jury, bridge, approaches across Bayou Woringer.

Ga., Atlanta — SWIMMING POOL — B.A. 12/1 — City, City Hall, Candler Park Swimming Pool, $100,000. CD 6/21/46.

† **Florida**—B.A. About 12/2—U. S. Eng., P.O. Box 4970, Jacksonville, east 10 miles of Levee L (Sec. 1) Central and Southern Florida Flood Control Proj., Civeng 08-123-53-18. CD 11/24/43.

† **Tennessee and Arkansas**—B.A. 12/2—U. S. Eng., P.O. Box 97, Memphis, Zone 1, casting 324,000 square of articulated concrete mattress on Richardson Landing, Tenn. and Helena, Ark., casting fields, CIVENG 40-041-53-69.

▲ **Tenn., Chattanooga**—B.A. 12/16—City, City Hall, Chattanooga Creek Interceptor Line and pumping station. $2,150,000. L. A. Schmidt, Jr., 817 Broad St., Chattanooga, Tenn., and Polk, Powell & Hendon, Stallings Bldg., Birmingham, Ala., engrs. CD 10/17/49.

BIDS ASKED—BUILDINGS

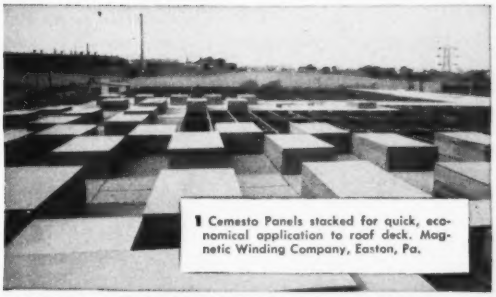
Miss., Marigold—SCHOOL—B.A. After 11/15—Marigold Consolidated School Dist., consolidated school. $325,-000. E. L. Mahaney, Millsaps Bldg., Jackson, archt.

† **Va., Norfolk**—COMMUNICATION CENTER—B.A. 11/18—Dist. P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, communication center at U. S. Naval Base, Spec. 34793. Plans deposit $40. CD 10/4/50.

Ga., Atlanta—SCHOOL—B.A. After 11/19—City School Bd., City Hall, Cascade Elementary School. $375,000. CD 8/27.

(Continued on page 115)

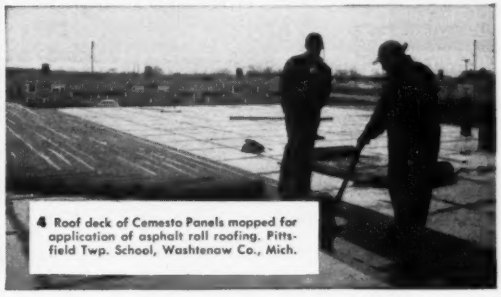
Cemesto* builds *insulated* roof decks *fast* and *at low cost!*



1 Cemesto Panels stacked for quick, economical application to roof deck. Magnetic Winding Company, Easton, Pa.

2 Caulking joints between Cemesto Panels. Smooth surface makes ideal roofing base. Carolina Asbestos Co., Marshville, N. C.

3 Cemesto Panel deck weather-stripped. All panel edges weather-sealed at factory. Magnetic Winding Co., Easton, Pa.



4 Roof deck of Cemesto Panels mopped for application of asphalt roll roofing. Pittsfield Twp. School, Washtenaw Co., Mich.

Cemesto, World's Most Versatile Building Material, combines amazing structural strength, high insulation value, interior and exterior finish—all in a single fire-resistant panel that's quick and easy to apply!

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No other building material gives you all the advantages of Cemesto Insulating Structural Panels for fast, low cost construction of roof decks, as well as curtain walls and partitions. For no other combines all the remarkable properties of this modern building material.

Strong, rigid, pre-formed Cemesto Panels are made of Celotex cane fibre insulation to which cement-asbestos facing is bonded on both sides by a highly vapor-resistant adhesive. They are lighter than most building materials, yet have the structural strength to carry the roof load with a high margin of safety. And their cane fibre core is protected against fungus, dry rot and termites by the exclusive patented Ferox* Process.

Cemesto Panels Insulate As They Build

When you build with Cemesto Panels, you do more than speed up work and cut costs. You also *insulate efficiently* for only slightly more than the cost of *un*insulated construction! The result: buildings that are cooler and more economical to air-condition in summer, warmer and thriftier to heat in winter . . . more comfortable, healthier working conditions for occupants . . . increased production and reduced accidents through improved employee efficiency . . . greater client satisfaction!

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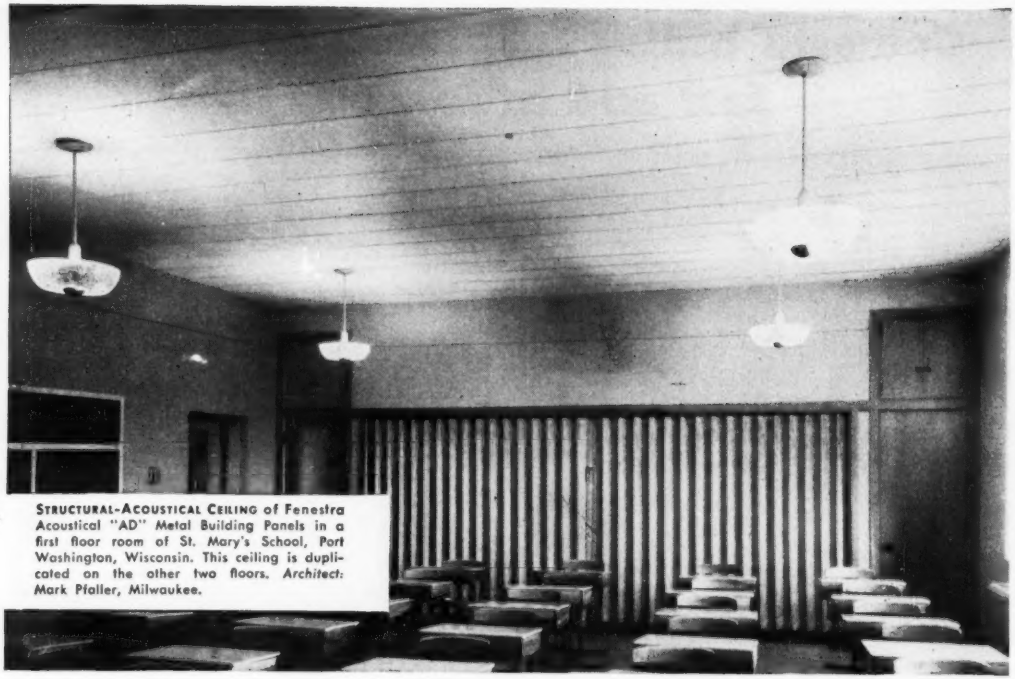

STRUCTURAL-ACOUSTICAL CEILING of Fenestra Acoustical "AD" Metal Building Panels in a first floor room of St. Mary's School, Port Washington, Wisconsin. This ceiling is duplicated on the other two floors. *Architect:* Mark Pfaller, Milwaukee.

Quiet doesn't have to be an "*extra*"!

Now acoustical treatment can be an integral part of your *structural* building. Nothing to *apply*! No extra *work* to pay for!

Fenestra* Acoustical "AD" Panels form ceiling, silencer and sub-floor . . . all in one *economical* package.

An "AD" Panel is a strong metal box beam. The flat, smooth, top surface forms the sub-floor or roof deck. The flat, smooth, perforated undersurface forms the ceiling. In the open space between is glass fiber sound insulation. Installation of interlocking panels is simple and quick!

Beautiful, rugged, and rigid, this new kind of acoustical ceiling can be washed or painted without hurting its 80% N.R.C. acoustical efficiency.

And perhaps even more important, it is *noncombustible!*

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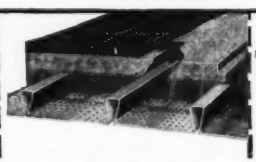
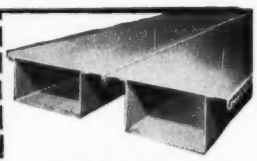
"C" Insulated Wall Panels. Width 16". Depth is 3". Steel or Aluminum.



Acoustical Holorib for acoustical-structural roof. Width 18". Depth 1½".



"D" Panels for floors, roofs, ceilings. Standard width 16". Depth 1½" to 7½".

(Continued from page 112)

Florida—BUILDING—B.A. 11/20—State Road Dpt., Tallahassee, building and facilities, Road 10, Welcome Station west of Pensacola near Alabama State Line, Job. 4801-107. Plans deposit $10. Sam P. Turnbull, state hy. engr.

Ga., Decatur—SCHOOL—B.A. 11/20—De Kalb Co. Bd. Educ., Court House, Skyland Elementary School, $300,000. Plans deposit $25. Francis M. Daves & Assocs., 957 B St. N. E., Atlanta, archts. CD 9/22.

N. C., Franklin—SCHOOL—B.A. 11/21—Macon Co. Bd. Educ., Franklin Negro High School, $300,000. Plans deposit $50. Lindsey M. Gudger, 52 Carter St., Asheville, archt.

▲ **Fla., Clearwater**—SCHOOL—B.A. 11/26—Pinellas Co. Bd. P. Instruction, 305 Haven St., 58 St. High School, $1,000,000. Extended date. CD 9/29.

Ga., Calhoun—HOUSING—B.A. 11/26—Calhoun Housing Auth., Calhoun, 68-unit housing, Projects GA 119-1 and GA 119-2. $600,000. Plans deposit $50. Abreu & Robeson, 141 Walton St. N.W., Atlanta, arihts. CD 3/29.

S. C., Greer—HOUSING—B.A. 11/28—Greer Housing Auth., Greer 65 housing units, Projects SC 16-1 and SC 16-2. $600,000. Plans deposit $50. John J. Harte Co., 284 Techwood Dr., Atlanta, Ga., archt. CD 4/1.

Ky., Lexington—HOSPITAL—B.A. After 12/1—Shrine Hospital for Crippled Children, 152 E. Maxwell St., hospital, $750,000. John T. Gillig, 180 Walnut St., archt. CD 8/5/52.

Ga., Blakely—HOUSING—B.A. 12/2—Blakely Housing Auth., Blakely, 85-unit housing, Projects GA 114-1 and GA 114-2. $800,000. Plans deposit $50. Bid date changed. H. L. Holman, Jr., Lomac Bldg., Ozark, Ala., archt. CD 10/28.

Ga., Cleveland—SCHOOL—B.A. 12/3—White Co. Bd. Educ., Cleveland, combination elementary and high school, $515,000. Plans deposit $50. Hal W. Greer, Buckhead Theatre Bldg., Atlanta, archt. CD 8/26/52.

SOON LETS CONTRACT—BUILDINGS

Fla., Jacksonville—HEALTH—Y.M.C.A. Foundation of Jacksonville, Fla. National Bank soon lets contract health building. $500,000. S. Ralph Fetner, 218 W. Church St., archt. CD 6/27/50.

N. C., Swannanoa—PLANT—Oerlikon Tool & Arms Corp., c/o Six Associates, Inc., archts., 1025 Hendersonville Rd., Asheville, soon let contract Propellant Pressing Bldg. No. 5. CD 11/29/51, under N. C., Asheville.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **VIRGINIA**—State Dpt. Hys., Central Office Bldg., 1221 E. Broad St., Richmond.

Moore Brothers, P. O. Box 1113, Staunton, Va. LB $251,884 W. B. mac. base, pen. top, bit. surf., 0.92 mi. and Broad Run Bridge 0.19 mi. W. Fauquier-Pr. William Co. Line 0.755 mi. E. Fauquier-Pr. William Co. Line, Rt. 29, Proj. 1730-01-1776-07-08, F-336 (13), Fauquier and Prince Williams Counties; LB, $162,653, W. B. mac. base, pen. top, bit. surf. 1.629 mi. W. Fairfax Co. Line-4.823 mi. W. Fairfax Co. Line, Rt. 29, Proj. 1776-02 (Group No. 33) FI-336 (14), Prince William Co.; LB, $100,330, stab. base, bit. 4.395 mi., 0.022 mi. W. Int. Rt. 623, Lee Co. Line, Rt. 603, Proj. 1384-13, S-365 (2), Scott Co.;

Pendleton Constr. Corp., P. O. Box 549, Wytheville, Va., LB, $98,216, stab. base, bit. 2.894 mi. Int. Rt. 635-2.992 mi. W. Int. Rt. 635, Rt 713, Proj. 1384-10, S-547 (1), Scott Co.;

T. E. Brown, Charlotte, N. C., LB, $276,076, plain air-entrained c. conc. 1.771 mi. 0.744 mi. W. of WCL Boydton-2.515 mi. W. of WCL Boydton, Rt. 58, Proj. 1758-25, Mecklenburg Co.;

Adams & Tate Constr. Co., 2725 Roanoke Ave., Roanoke, Va., LB, $200,190, b. conc. base. F1 top, 3.041 mi. 1.975 mi. N. of Int. Rt. 14 at Adner, 0.241 mi. N. of Int. Rt. 33 at Glenns, Rt. 17, Proj. 2036-0405 F-189 (1); F-18 (2), Gloucester Co.;

A. C. Shearer Co., P. O. Box 128, Chapel Hill, N. C., LB, $100,652 soil-cement, bit. surf. 4.912 mi. Int. Rt. 602 (White House)-Int. Rt. 49 (Averett) Rt. 735, Proj. 1358-, 0-11, S-447 (2), Mecklenburg Co.;

Yount & Co., P. O. Box 503, Staunton, Va., LB $73,615, stab. base, 2.716 mi. 0.032 mi. E. of Augusta Co. Line (Blue Ridge Parkway)-1.5 mi. W. of Int. Rt. 680, Rt. 664, Proj. 1362-05, S-153 (2). Bids Oct. 16. CD 10/3.

Fred B. Fuqua, Lynchburg, Va., CA, $500,000. 2 story, 155x85 ft., gatehouse, swimming pool and parking facilities, NATURAL BRIDGE, VA. Natural Bridge Corp., Natural Bridge, Va. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, Va., engrs.

E. C. White, 1020 W. 39 St., Norfolk, Va., LB $73,351, bridge; LB $154,543, paving Cottage Toll Rd., NORFOLK, VA. City, City Hall, Norfolk, Va. Bids Oct. 17. CD 10/9.

WEST VIRGINIA—State Rd. Comn., Charleston, W. Va., **Drave Corp.**, Neville Island, Pittsburgh, Pa., CA, $622,241, bridge substructure over Kanawha River, Montgomery. CD 12/3/51.

NORTH CAROLINA — State Hy. & P. Wks. Comn., Raleigh,

Bellanger Paving Co., Box 1046, Greenville, S. C. CA $624,139, est. $400,000-$500,000. subgrade rein.-con., structures 1.325 mi. East Lee St. in Greensboro from S. Elm St. to Hackett St., Guilford Co. Bids Oct. 21, awarded Oct. 29. CD 10/27, under LB.

Hickory Constr. Co., Hickory, N. C. LB $86,325. swimming pool, bathhouse, KINSTON, N. C. City, Kinston, N. C. CD 10/1.

WELLMAN *Williams Type*

PERFORATED DRAGLINE BUCKET

speeds the wet jobs

● You get big loads fast with this Wellman Perforated Dragline Bucket because excess water goes out while gravel stays in on jobs such as illustrated.

Built of special alloy steel—all welded for strength plus light weight. You can work faster with less maintenance with Wellman dragline buckets.

Want Facts?
Write for free descriptive bulletins.

Dragline, Clamshell, Custom-Built Buckets, Stone and Wood Grabs.

THE WELLMAN ENGINEERING COMPANY

7000 Central Avenue

Cleveland 4, Ohio

"Gunite" ..... the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY

"GUNITE" CONTRACTORS

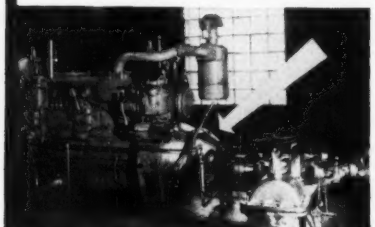
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.

MANUFACTURERS OF THE "CEMENT GUN"

SAVE *Two-Ways*

with S-N REDUCTION GEARS

1. in Purchase Cost **2.** in Operating Cost



S-N Reduction Gear is shown on a Caterpillar Diesel (78 H.P. at 1600 r.p.m.) in this municipal pumping station.

World-famous **SNOW-NABSTEDT** Gears and Power Cut-Off Clutches transmit full power to load SMOOTHLY, QUIETLY, EFFICIENTLY, at the most ECONOMICAL speed for the driven equipment.

*Oil Equipment

*Power Shovel

*Ditcher

*Rock Crusher

*Drag Line

S-N Herringbone absorbs axial thrust, gives longer service, is quieter, more powerful.

★ FOR MANY KINDS OF CONSTRUCTION EQUIPMENT

5 Models. A wide range of ratios available from stock. 80 to 1000 H.P. With Power Take-Off Clutches to suit engine needs. For reliable low-cost power transmission backed by a half-century of 'round-the-world experience, WRITE TO-DAY for full details.

★ FOR LOW INITIAL COST ★ FOR LOW LONG RANGE COST

The

SNOW-NABSTEDT GEAR CORPORATION

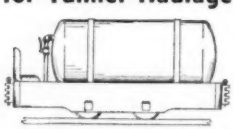
★ 211 Welton Street, Hamden, Connecticut ★

DIRECTING POWER FOR GREATER PROFIT Since 1906

The Snow-Nabstedt Gear Corp.
211 Welton St., Hamden, Conn.
Gentlemen: Kindly send Ind. Reduction Gear Catalog. Our equipment application is: .....
NAME ..... TITLE .....
COMPANY .....
ADDRESS .....
CITY ..... STATE .....

REVERSE & REDUCTION S-N GEARS

AIR LOCOMOTIVE for Tunnel Haulage



Operates at 100 p.s.i. pressures. May be recharged at any Air Valve. Prices for 24" gage (fob) factory begin at **$1600**

MAYO TUNNEL & MINE EQUIPMENT LANCASTER, PA

New Transits and Levels by Experts

Each Buff is dependable, accurate and economical.

Send for catalog #329.

Headquarters for Repairs

Every make of instrument, renewed by Skilled Workmen.

Our Shops are located at Jamaica Plain, Boston, Mass.

Buff & Buff Mfg. Company

HENRY A. BUFF, *President.*

F. J. Seastrunk, Columbia, S. C. CA. $109,218, Proj. SC 37, sub-stations, Lexington, SOUTH CAROLINA. Mid-Carolina Electric Co-operative, Inc., Lexington, N. C. McCall-Thomas Eng. Co., Inc., Orangeburg, S. C., engr. Bids Oct. 15. CD 7/5/49.

▲† Suber & Co., Whitemire, S. C., and **A. R. Thompson,** Rutherfordton, N. C. CA. **$1,805,668.** Runways and taxiways, Charleston Air Base, No. 38-031-53-8, CHARLESTON, S. C. U. S. Eng., Custom House, Charleston, S. C. Bids Oct. 22, awarded Oct. 30. CD 10/28.

▲† R. P. Farnsworth & Co., P. O. Box 850, New Orleans, La., LB, **$5,050,126,** 2 special AMC warehouses at Warner Robins Air Force Base, Inv. 53-13, MACON, GA. U. S. Eng., 200 E. Julian St., Savannah, Ga. Bids Oct. 30. CD 10/9.

Hillard Plumbing & Heating Co., 91 Currier St., N.E. Atlanta, Ga., CA, **$99,891,** industrial waste system addns., MARIETTA, GA. Lockheed Aircraft Corp., Marietta, Ga. Bids Oct. 23. CD 10/22.

Continental Engineers, 761 Peachtree St. N.E., Atlanta, Ga., CA, **$399,700** steam distr. system, MARIETTA, GA. Lockheed Aircraft Corp., Marietta, Ga. Bids Oct. 28. CD 10/20.

Ivy H. Smith Co., 1525 San Marco Blvd., Jacksonville, Fla. LB, **$292,735,** water softening plant addn., HOLLYWOOD, FLA. City, City Hall, Hollywood, Fla. Bids Oct. 21. CD 9/30.

City, City Hall, Lakeland, Fla., Owner Builds, **$260,000** off-Street parking lot paving, etc., LAKELAND, FLA.

City, City Hall, Athens, Tenn. Owner Builds. Est. $75,000. street imprvs., ATHENS, TENN.

MISSISSIPPI—State Hy. Dpt., T. C. Robbins, dir., Jackson,

W. R. Fairchild, Hattiesburg, Miss. CA **$422,087,** est. $435,000. grade, drain, culverts, bridges 4.05 mi. Miss. Hy. No. 8 between Philipp and Holcomb, Proj. F 016-2 (3), Grenada Co.;

J. H. Moon & Sons, Port Gibson, Miss. CA **$176,134,** est. $207,000. grade, box bridge, bridge, temporary grav. surf. course 8.096 mi. on Miss. Hy. No. 8 between Minter City and Ruleville, Proj. F 016-2 (1), Leflore Co.;

Worsham Brothers, Corinth, Miss. CA **$164,680,** est. $213,000. grade, bridges, temporary grav. surf. 6.902 mi. Miss. Hy. No. 315 between Miss. Hy. No. 6 and Water Valley, Proj. S 866-1 (2), Panola Co.; CA **$172,433,** temporary grav. surf. 6.16 mi. Miss. Hy. No. 30 between Wheeler and Pleasant Ridge, Proj. F 044-1 (7), Prentiss Co.;

Lynwood Smith, Lake Village, **Ark.** CA **$289,685,** est. $335,000. grade, drain, culverts, bridges 13.718 mi. Miss. Hy. No. 42 between Sumrall and Bassfield, Proj. S 193-1 (1), Lamar and Jefferson Davis Counties;

Boyd Constr. Co., Columbia, Miss. CA **$129,549,** est. $140,000. grade, drain, culverts, base course, double bit. surf. tr. 6.942 mi. Miss. Hy. No. 42 between Sumrall and Miss. Hy. No. 24, Proj. S 204-1 (1), Lamar Co.;

Dickerson & Bowen, Brookhaven, Miss. CA **$149,311,** est. $160,000. base preparation, double bit. surf. tr. 11.843 mi. Miss. Hy. No. 22 between Canton and Flora, Proj. S 515-1 (1), Madison Co.;

Cook Constr. Co., Hy. 80W., Jackson, Miss. CA **$153,509,** est. $170,000. grade, drain, culverts, box bridge 5.181 mi. Miss. Hy. No. 4 between Sarah and Senatobia, Proj. S 910-1 (1), Tate Co. Grand total $1,657,388. Bids Oct. 28. CD 10/16.

Boyd Constr. Co., Grenada, Miss. CA **$61,578.** grading, paving 4.688 mi. county hy. between Kirklin and Tylertown, TYLERTOWN, MISS. Bd. Supervs. Walthall Co., Tylertown, Miss. Bids Oct. 24. CD 10/13.

A. A. Bush, Laurel, Miss. CA **$67,490.** grading, paving, 6.299 mi. county road between Ten Mile and Ramsey Springs, WIGGINS, MISS. Bd. Supervs. Stone Co., Wiggins, Miss. Bids Oct. 24. CD 10/13.

Bartley & Binnings, 433 Gravier St., New Orleans, La. CA Est. **$75,000.** water treatment plant at Kaiser Aluminum Plant, Chalmette, NEW ORLEANS, LA. Kaiser Engineers, Inc., Chalmette, La. Bids Sept. 29. CD 9/17.

Keller Constr. Corp., 7900 Palm St., New Orleans, La. LB **$722,452.** St. Bernard underpass at Florida Ave., NEW ORLEANS, LA. City, City Hall, New Orleans, La. Bids Oct. 24. CD 10/1.

Mount Vernon Telephone Co., Brodhead, Ky. Owner Builds. Est. **$200,000.** telephone lines, BRODHEAD, KY.

Foothills Rural Telephone Cooperative, Paintsville, Ky. Owner Builds. Est. **$300,000.** telephone lines, PAINTSVILLE, KY.

Farrar Constr. Co., McMinnville, Tenn. CA **$169,599,** water supply imprvs., PARSONS, TENN. Town, Parsons, Tenn. Bids Oct. 22. CD 9/26.

BUILDINGS

LOW BIDS AND CONTRACTS

P. & W. Constr. Co., P.O. Box 463, Hampton, Va., LB, **$493,587,** 1 story, brick, concrete masonry 24-room elementary SCHOOL, HAMPTON, VA. Hampton School Bd., Citizens National Bank Bldg., Hampton, Va. Bids Oct. 28. CD 10/2.

Sharpe & Hamaker, Inc., 3248 Wilson Blvd., Arlington, Va., CA. **$838,270,** Osbourne HIGH SCHOOL, MANASSAS, VA. Prince William County School Bd., Manassas, Va. Bids Oct. 24. CD 11/3, under LB.

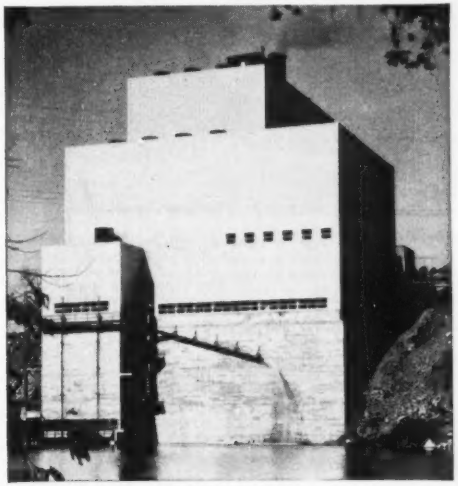
▲ Virginia Eng. Co., Inc., 29 St. and James River, Newport News, Va., LB, **$2,713,000,** Public HOUSING COMMUNITY VA-3-5, incl. 340 masonry dwelling units, NEWPORT NEWS, VA. Newport News Redevelopment & Housing Auth., P.O. Box 77, Newport News, Va. Bids Oct. 28. CD 10/7.

(Continued on page 119)

PERFECT FOR POWERHOUSES

Q-PANELS

Northern Virginia Power Co., Riverton, Va.
Designed and built by Sanderson & Porter, Inc. Chapman, Evans & Delahanty, Associate Architects.



Every feature of a Q-Panel is a desirable feature for powerhouse construction . . . which explains why Q-Panels have captured the powerhouse market.

Q-Panels go up fast—50 sq. ft. in 9 minutes. A small crew quickly attaches the panel to the steel framework. Little blocks don't pile up fast. *It's much quicker to hang a wall than to pile it up.*

Q-Panels provide a maintenance-free exterior; they are available in a variety of materials for exterior finishes, depending on their availability at time of ordering.

A Q-Panel is an insulated metal sandwich, only 3″ thick but with insulation value greater than a 12″ masonry wall.

The striking fluted surface of Q-Panels is now a familiar sight on powerhouses from coast to coast.

Write for Q-Panel Catalog

H. H. ROBERTSON CO.

Factories in Ambridge Pa.; Hamilton, Ontario; Ellesmereport, England

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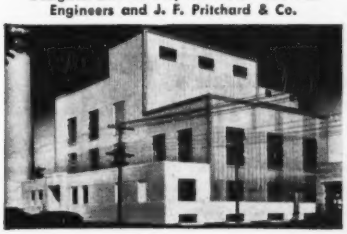
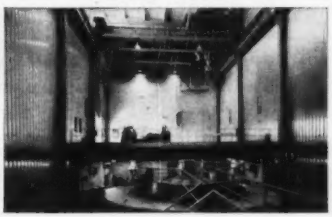
Offices in ALL Principal Cities in the U. S. A. and Canada

World-Wide Building Service

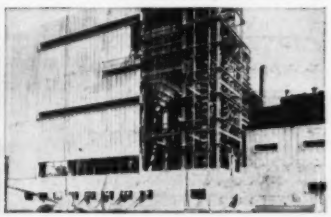
Iowa Public Service Co., Eagle Grove, Iowa
Designed and built by Iowa Public Service Engineers and J. F. Pritchard & Co.



Tennessee Valley Authority Watauga Project
Elizabethton, Tenn.

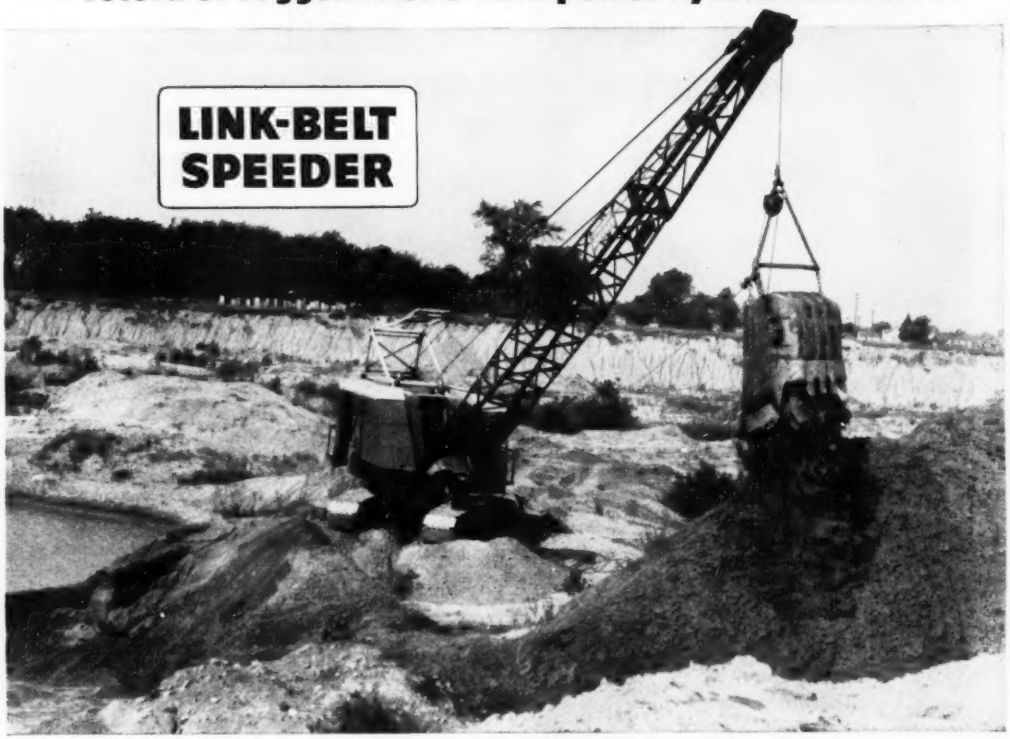


Note clean, quick, dry, safe, curtain-wall construction.



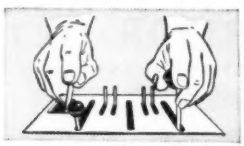
$115 for service in 5 seasons

--record of rugged K-370 with power hydraulic controls

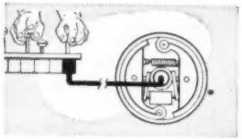


LOUIS MARSACK & SONS, St. Clair Shores, Mich., load out 2500 yds. of sand and gravel every 8 hours with this 1½-yd. Link-Belt Speeder. In addition to the low service cost above, which excludes engine service—the K-370 provided further savings by replacing two smaller competitive rigs formerly necessary to handle this work. Operator Grant Marsack says, "It's easy to operate, has plenty of power, and needs no adjustments to speak of."

These Link-Belt Speeder PLUS FEATURES mean more output, less cost



Speed-o-Matic Controls — fully hydraulic! You "feel" the load all the way. Simple, easy—fingers instead of muscles do work.



Speed-o-Matic Clutch—hydraulically actuated, simple, smoothly responsive. Runs cool. Eliminates need for frequent adjustments.

Eliminates up to 150 parts — cuts friction, no worn bushings, pins, links or clutch toggles to put you "down."

Service — fast, efficient. Link-Belt Speeder Service is nationwide—near you with replacement parts, factory-trained mechanics.

13,032

LINK-BELT SPEEDER

CORPORATION

Builders of the most complete line of shovels, cranes and draglines

CEDAR RAPIDS, IOWA

(Continued from page 116)

Dubose Realty Co., Kinston, N. C. Owner Builds. Approx. $500,000. 75 RESIDENCES, KINSTON, N. C.

Charles T. Wilson Constr. Co., 908 Demerius St., Durham, N. C. LB $300,000. elementary SCHOOL, WILSON, N. C. City, City Hall, Wilson, N. C. CD 7/25.

Clinton Cotton Mill, Clinton, S. C. Owner Builds. Approx. $350,000. MILL No. 2, CLINTON, S. C. CD 9/8/50.

Fiske-Carter Constr. Co., Masonic Temple, Greenville, S. C. CA. Approx. $300,000. COTTON MILL addn., GREAT FALLS, S. C. J. P. Stevens & Co., Great Falls, S. C. Bids Oct. 14. CD 10/10.

Paragon-Georgia, Inc., c/o Summer-Locatell & Co., archts., 12 Third St. N. E., Atlanta, Ga., rejected bids Oct. 21. MOTOR COURT, LANGLEY, S. C. Est. $400,000. CD 10/12.

Griffin Constr. Co., 26 3 St. N.W., Atlanta, Ga., CA, $180,000, FACTORY addns. alterations, ATLANTA, GA. James Lees & Sons Co., 465 Bishop St. N.W., Atlanta, Ga. Bids Oct. 14.

Jordan Contg. Co., Andrews Rd., Columbus, Ga., LB $914,975, Negro High SCHOOL, COLUMBUS, GA. Muscogee Co. Bd. Educ., Court House, Columbus, Ga. Bids Oct. 29. CD 10/16.

Evans Constr. Co., Warrenton, Ga., CA, $391,750 HOUSING Projects GA 125-1 and GA 125-2, COMMERCE, GA. Commerce Housing Auth., Commerce, Ga. Bids Oct. 28. CD 10/10.

Central Constr. Co., Decatur, Ga., LB, $307,100 Candler-McAfee SCHOOL, DECATUR, GA. DeKalb Co. Bd. Educ., Decatur, Ga. Bids Oct. 28. CD 10/14.

John A. Bouvier, Jr. & M. B. Wisehart, c/o Edwin T. Reeder, archt., 1777 Biscayne Blvd., Miami, Fla., Owner Builds, $500,000 WAREHOUSE, MIAMI, FLA.

Taylor Constr. Co., 2875 N. Lejeune Rd., Miami, Fla., CA, $350,000, APARTMENT, MIAMI BEACH, FLA. Queen Elizabeth Hotel Apartment Corp., c/o contractor.

Jerry Cogan, 2700 23 St. N. St. Petersburg, Fla., CA, $85,000 WAREHOUSE, ST. PETERSBURG, FLA. Veterans Building Supplies, 705 3 St., St. Petersburg, Fla.

Henry Baya Constr. Co., First National Bank Bldg., Tampa, Fla., CA, $340,000, 34 RESIDENCES, TAMPA, FLA. Clewis Homes, Inc., Morrison Court, Tampa Fla.

Brice Bldg. Co., P.O. Box 1028, Birmingham, Ala., CA $135,000, WAREHOUSE - OFFICE, BIRMINGHAM, ALA. J. R. Waters, c/o contractor.

Virden Constr. Co., Greenville, Miss. Owner Builds. Est. $300,000. 50 RESIDENCES, GREENVILLE, MISS.

Quinn Drug & Chemical Co., Hy. 49, Greenwood, Miss. Owner Builds. Est. $150,000. PLANT addn., GREENWOOD, Miss.

American Compress & Warehouse Co., Alexandria, La. Owner Builds. Est. $100,000. WAREHOUSE addn., ALEXANDRIA, LA.

N. Cefalu Co., Amite, La. Owner Builds. Est. $85,000. PLANT addn., AMITE, LA.

L. A. Warlick Contg. Co., 747 E. 11 St., Chattanooga, Tenn. CA. Approx. $100,000. MILL addn., CHATTANOOGA, TENN. Ilena Mills, Hamilton Natl. Bank Bldg., Chattanooga, Tenn. CD 10/30.

▲† **Brock & Blevins Co.,** Rossville, Ga., LB $1,234,567, rehabilitation north acid area of Volunteer ORDNANCE WORKS, CHATTANOOGA, TENN. U. S. Eng., 303 Federal Office Bldg., Nashville, Tenn. CD 5/27.

▲ **E. I. duPont de Nemours & Co., Inc.,** duPont Bldg., Wilmington, 98, Del. Own Forces. Approx. $9,000,000. continuous filament nylon yarn PLANT, CHATTANOOGA, TENN.

▲ **Johnson & Willard,** 422 W. Front St., Knoxville, Tenn. CA. $5,749,000. RESEARCH CENTER and HOSPITAL, KNOXVILLE, TENN. University of Tennessee, Knoxville, Tenn. Bids Oct. 7. CD 10/10, under LB.

Sam P. Maury, 554 Adams St., Memphis, Tenn. CA. $750,000. 100,000 sq. ft. FACTORY addn., MEMPHIS, TENN. International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill. Bids Oct. 22, awarded Nov. 27. CD 10/16.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Wisconsin—B.A. 11/18—State Hy. Comn., State Hy. Office Bldg., Madison, Contrs. 3 and 4, storm sewer The Old U.S.H. 41-S.T.H. 23 Road (Corium, Sonn and Boland Subways) U.S. Hy. 41 FG 03-1 (30) (31) (32).

Ill., Pekin—B.A. 11/24—City, City Hall, sanitary sewers lateral, Contract 51-A. $685,000. Crenshaw & Jost, 512 Court St., engrs. CD 9/3.

Ohio—B.A. 11/24—Ohio Dpt. P. Wks., Clyde Moyer, dir., Columbus, 475 ft. dam, 30 ft. high, over Little Hocking River in Vetoe Lake area of Washington Co.

BIDS ASKED—BUILDINGS

† **Ill., Great Lakes**—STORAGE FACILITIES—B.A. 11/18—P. Wks. Officer, Bldg. 1-A, Ninth Naval Dist., Great Lakes, 6 storage facilities, Spec. 35909. CD 10/13.

▲† **Ill., Chicago**—POST OFFICE—B.A. About 12/10—General Services Admin., Public Building Service, General Services Bldg., 19 and F Sts. NW., Wash. 25, D. C., remodeling Buildings 1, 2 and 3 of U. S. Post Office, Van Buren, Harrison and Polk Sts. $1,168,000. CD 10/25/45.

† **O., Columbus**—WAREHOUSE, etc.—B.A. 12/12—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., warehouse for flammables and railroad spur track, Columbus General Depot, Eng. 46-022-53-21. CD 9/9.

MOST-SPECIFIED FOR BULK STORAGE by engineers and contractors

Kalamazoo

GLAZED TILE INDUSTRIAL STORAGE BINS

- MADE FROM FINEST FIRE CLAY OBTAINABLE
- ECONOMICAL AND EASY TO ERECT
- HEAVY, MONOLITHIC CONSTRUCTION
- WEATHER PROOF, FIRE PROOF, CORROSION PROOF
- MAXIMUM PROTECTION FOR CONTENTS against freezing, condensation, spoilage, contamination
- LONG-LIVED . . . outlast most buildings.

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Kalamazoo TANK and SILO COMPANY

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HYDRAULIC • DIPPER • CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters

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DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

Hayward Buckets

Use this Class "E" Clam Shell Bucket for handling crushed stone, gravel, sand and other bulk materials.
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- • • and others

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YOUR APPLICATION WILL BE GIVEN PROMPT CONSIDERATION

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MR. R. ERIE

HYSTER COMPANY
2902 N. E. Clackamas Portland 8, Oregon

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Because of its streamline design, a Crescent bucket penetrates tough materials with ease, gets a full load quickly, hauls this load at speed of 400 f.p.m., dumps automatically wherever operator desires—all with economical use of power.

CRESCENT Scraper buckets are built in five types and fifteen sizes. Pictured above is a large size CRESCENT design for heavy excavating.

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Would you use 1925 construction equipment today? No. Why not change over and equip your jobs with modern office trailers and cut costs.

CONTRACTORS' OFFICE TRAILER

Models 24'—28'—35' Price $2100. to $3500. Birch finish, drafting table, 2 built-in desks with letter files & drawers, other conveniences. Can offer three year finance plan. Write for pictures and plans.

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Mich., Midland—DIAL TELEPHONE EXCHANGE—Bids Asked—Michigan Bell Telephone Co., 1365 Cass St., Detroit, brick, steel, dial telephone exchange bldg. $300,000, Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, archt.

SOON LETS CONTRACT—BUILDINGS

▲ Ill., Lemont—GENERATING PLANT—Public Service Co. of Northern Illinois, 72 W. Adams St., Chicago, Zone 3, soon lets contract generating plant substructure, dock and canal widening, near here. $60,000,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Zone 3, engrs. CD 2/2/51.

▲ Mich., Detroit—SANCTUARY and EDUCATION—Westminster Presbyterian Church, Rev. Arthur Visser, 9851 Hamilton St., soon lets contract sanctuary, education bldg., social hall, manse, Outer Drive and Hubbell Sts. $1,300,000. Harold H. Fisher & Assoc., 1605 Industrial Bank Bldg., archts. CD 9/7/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

OHIO—State Hy. Dpt., Columbus,

Conn Welding & Machine Co., New Castle, Pa., LB $182,630, est. $234,488, strengthening and repairing 2 bridges over Scioto River on Rtes. 124 and 348, Pike Co., grading, b. conc. paving short sect. of the two routes in Pike and Scioto Counties. Bids Oct. 28.

Shullo Constr. Co., 1200 Home St., Akron, O., CA. Approx. $112,000. 7,900 ft. sanitary sewer and water mains extension to cover 409 acres, west of Fairlawn Heights on Sand Run Parkway, AKRON, O. Fairlawn Building & Realty Co., c/o Max Wyant, 976 Bailey St., Akron, O. Emmett J. McDonald, 265 S. Main St., Akron, project planner.

Kent Bros. Constr. Co., 22 E. Gay St., Columbus, O. LB $309,000, est. $268,065, dam across Kokosing Lake, Knox Co. near Fredericktown, MOUNT VERNON, O. State Dpt. Natural Resources, 65 S. Front St., Columbus, O. Bids Oct. 20. CD 9/24.

† U. S. Eng., 420 Locust St., St. Louis, 2, Mo., cancelled bids to have been opened Nov. 14, levees Prairie Du Rocher, Illinois and vicinity (Edgar Lakes and Prairie du Rocher and Modoc Drainage and Levee Districts) Proj. Item I-E, Randolph Co., CIVENG 23-065-53-48, ILLINOIS. Will re-advertise. CD 10/27.

▲ Standard Paving Co., 30 N. La Salle St., Chicago, 2, Ill., LB. $159,219, grade separation Calumet Expressway over Tri-State Expressway, H 066-030.6MFT; LB. $565,677, grade separation Calumet Expressway over Grand Trunk R.R.RW, 066.0303.7 M.F.T.;

Arcole Midwest Corp., 3225 Main St., Evanston, Ill., LB. $128,173, grade separation Calumet Expressway over Tri-State Expressway, 066-0303.6A,MFT.

Robert R. Anderson Co., 4550 Patterson St., Chicago, 41, Ill., LB. $134,434, grade separation, Calumet Expressway over Grand Trunk R.R.RW;

Superior Concrete Constr. Co., 5113 S. Woodlawn St., Chicago, 15, Ill., LB. $209,911, grade separation substructure, 130 St. over Michigan Central R.R. and Kensington and Eastern R.R. Rys., 066-090 MFT.;

Allied Structural Steel Co., 20 N. Wacker Dr., Chicago, 6, Ill., LB. $168,694, grade separation substructure 130 St. over Michigan Central R.R. and Kensington and Eastern R.R. Rws., 066-090A-MFT.;

Thos. McQueen Co., 1313 Circle Dr., Forest Park, Ill., LB. $101,610, Edens Expressway stabilized shoulders Glenview Rd. to Lake-Cook Co. line, CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. Bids Oct. 28. CD 10/22.

▲ M. J. Boyle, 2480 Elston St., Chicago, Ill., and Paschen Bros. Constr. Co., 2739 Elston St., Chicago, Ill., CA. $3,696,050, Calumet Intercepting Sewers, Villages of Alsip and Oaklawn and Twps. of Stickney and Worth, CHICAGO, ILL. Sanitary District of Chicago, 910 S. Michigan Ave., Chicago, 5, Ill. Bids Oct. 2, awarded Oct. 24. CD 10/15, under LB.

Michigan Gas Utilities Co., Hillsdale, Mich. Owner Builds, Est. $500,000. gas mains, distribution facilities, Coldwater-Hillsdale area, MICHIGAN.

D'Agostini Constr. Co., 6262 May St., Detroit, Mich. CA $60,628. 8 and 12 in. sanitary sewers in Easements and Homestead St., HARPERS WOODS, MICH. City, Martin T. Hogan, city clk., Harpers Woods, Mich. Bids Sept. 12. CD 9/4.

Baseline Constr. Co., Center Line, Mich. CA $35,000. water sys., 7,000 lin. ft. 6- to 12-in. c.i. water mains, various sections, hydrants, gates, gate wells, INKSTER, MICH. Inkster Village, Inkster, Mich. Bids Oct. 7. CD 10/1.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Brune, Harpenau & Co., 3075 Neisel Ave., Cincinnati, O., Owner Builds. $6,000,000. 400 one-family, 1½ story, brick HOMES on 83-acre tract on Glenway Ave. and Werk Rd. CINCINNATI, O. Wm. Brynes, 1659 Sutton Ave., Cincinnati, O., archt. Joseph Allen, 4638 Glenway Ave., Cincinnati, O., engr.

▲ Henry Gallenstein, Jr., 7524 Miami Ave., Madeira, O. Owner Builds. $1,000,000. 38 one and two-story brick, stone timber HOMES, Tiki Ave., Michael Dr. and Bobby Ct., in Kenwood, CINCINNATI, O. Joseph Allen, 4638 Glenway Ave., Cincinnati, O., engr. Henry Gallenstein, Jr., c/o owner, archt. Awarded Oct. 27.

Austin, Co., 16112 Euclid St., Cleveland, O., CA. $140,000 steel WAREHOUSE, COLUMBUS, O. Federal Glass Co., 515 E. Innis Ave., Columbus, O.

Leonard H. Krill Co., 2169 E. 33 St., Cleveland, O. CA. Approx. $500,000. 1 story, 60,000 sq. ft. MFG. BLDG. for carpet processing work, 5905 Grant Ave., CUYAHOGA HEIGHTS, O. James Lees & Sons Co., Bridgeport, Pa. Dalton-Dalton Assoc., 979 The Arcade, Cleveland, O., archts. Andros Olah, c/o contractor, engr. Awarded Oct. 20.

(Continued on page 123)

THIS IS THE DIESEL

for any job from 32 H.P. up

When it comes to *pulling power*—and that means *paying power* in tractors, tugs and tillers as well as trucks—the General Motors 2-cycle Diesel is in a class by itself.

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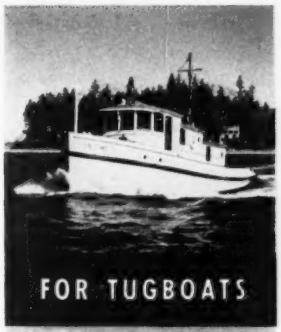
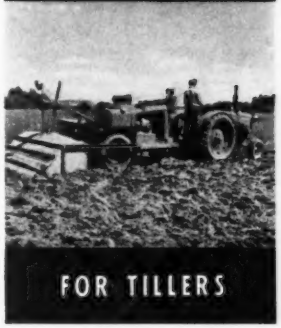
Ask your GM Diesel distributor to tell you how *this* Diesel can step up your production and cut your costs on mobile, portable or stationary installations.





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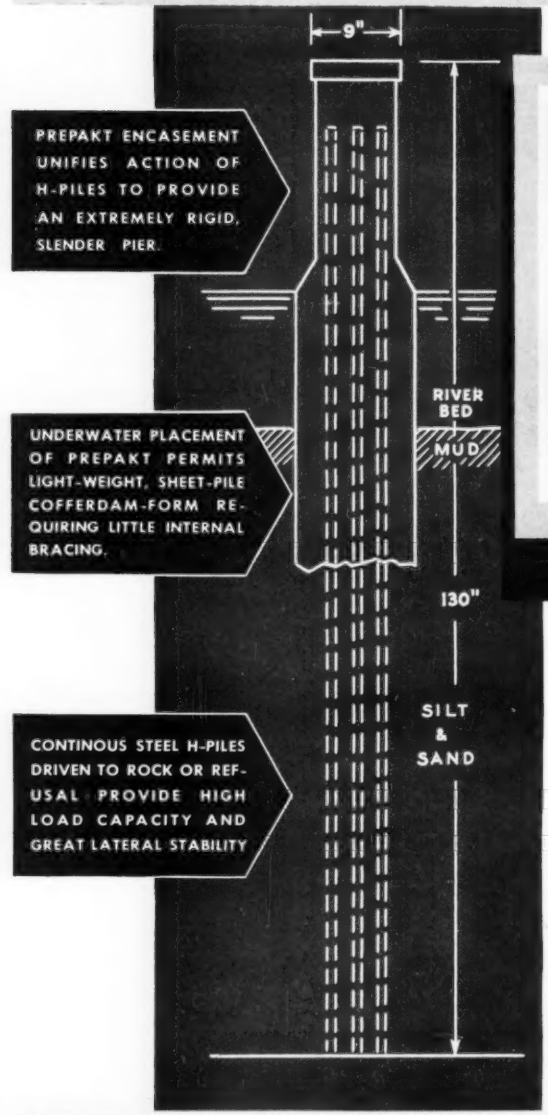
9"
PREPAKT ENCASEMENT UNIFIES ACTION OF H-PILES TO PROVIDE AN EXTREMELY RIGID, SLENDER PIER.
RIVER BED
MUD
UNDERWATER PLACEMENT OF PREPAKT PERMITS LIGHT-WEIGHT, SHEET-PILE COFFERDAM-FORM REQUIRING LITTLE INTERNAL BRACING.
130"
SILT & SAND
CONTINOUS STEEL H-PILES DRIVEN TO ROCK OR REFUSAL PROVIDE HIGH LOAD CAPACITY AND GREAT LATERAL STABILITY

Concrete pier containing 33—12x12 steel H-piles imbedded in Prepakt Concrete.

Notable economies resulted from the adoption of the Prepakt H-pile method of pier construction on this Northern bridge.

All work below the river surface was accomplished underwater eliminating unwatering which would have required heavily braced cofferdams, caissons and other difficult aids to subaqueous work.

●

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●

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(Continued from page 120)

▲ **Robert N. Clark**, c/o Long & Ehler, Real Estate, Dayton, O. Owner Builds. $1,500,000. 64 HOMES, on 31-acre tract in Van Buren Twp., east of State Rte. 48, 1 mi. south of Stroop Rd., DAYTON, O.

Fishe-Stouwe Constr. Co., Decatur, Ill., CA. $318,719. 1 story, 164x186 ft., brick, concrete block SCHOOL, MORRISONVILLE, ILL. Morrisonville Community Unit School Dist. 1, James E. Graham, supt. Schools, Morrisonville, Ill. Bids Oct. 10. CD 9/30.

I. E. Baughke Co., Benton Harbor, Mich. CA. Est. $300,000. 2 story, brick Boynton Elementary SCHOOL, BENTON HARBOR, MICH. City, Benton Harbor, Mich. R. W. Petrie & Assoc., Benton Harbor, Mich., archts. Bids Oct. 1.

Irving & Hyman Green, 13324 West 7 Mile Rd., Detroit, Mich. Owner Builds. Est. $450,000. 42 brick single HOMES, DETROIT, MICH.

Wheeler-Blaney Co., Kalamazoo, Mich. CA $134,550. POWER PLANT imprvs. Incl. ash handling and dust collector system for boiler plant, Kalamazoo State Hospital, KALAMAZOO, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lansing, Mich. Bids Sept. 23. CD 3/13/51.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Nebraska—RURAL DISTRIBUTION LINES—B.A. 11/19—Howard Greeley Rural Public Power Dist., St. Paul, 15.52 mi. rural distr. lines and one sub-station, Hall and Howard Counties. $80,000. Raymond H. Reed & Co,. Columbus, engr. CD 10/23.

† **Iowa**—B.A. 11/25—Soil Conservation Service, 434 Plankington Ave., Milwaukee, Wis., flood control works on Walling Minor Watershed, Part A, R3-100-53, near Anthon, Woodbury Co. CD 7/5/50.

† **Neb., Fort Crook**—COLD STORAGE—B.A. 11/25—U. S. Eng., 1709 Jackson St., Omaha, conversion of Bldg. 77 to cold storage at Offutt Air Force Base, Inv. 25-066-53-56. CD 5/22.

† **N. M., Clovis**—P. O. L. FACILITIES—B.A. 11/25—U. S. Eng., Box 1538, Albuquerque, P. O. L. facilities Clovis Air Force Base, ENG 29-005-53-34, $275,000. CD 10/16.

† **Neb., Lincoln**—AIRMENS CLUB—B.A. 11/26—U. S. Eng., 1709 Jackson St., Omaha, airmen's club with pertinent facilities at Lincoln Air Force Base, Inv. 25-066-53-14. CD 7/17.

† **Wyoming**—DISTRIBUTION BOARDS, etc.—B.A. 12/9—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. furnishing and del. f.o.b. cars at shipping point or f.o.b Casper, distribution boards, control cabinets, distribution transformers, for Alcova Power Plant, Kendrick Proj. Spec. DS 3830. L. N. McClellan, ch. engr. CD 9/12/44, under Earthwork, Waterways.

† **Neb., Lincoln** — DORMITORIES — B.A. On or About 12/30—U. S. Eng., 1709 Jackson St., Omaha, airmens dormitories and mess and admin. bldg., incl. 12 three story, 38x282 ft. steel SAC type barracks, at Lincoln Air Force Base, Inv. No. Eng 25-066-53-37. Plans deposit $50. CD 10/22, under LB.

Tex., Lubbock—TELEVISION STATION—Bids Asked—Texas Telecasting Co., Whiteside Bldg., television station, incl. 1,000 ft. antenna tower. Approx. $30,000. Butler-Brasher Co., 412 Avenue M, engr.-archt. CD 10/24.

BIDS ASKED—BUILDINGS

▲† **Okla., Fort Sill**—ACADEMIC—B.A. 11/20—U. S. Eng., Box 61, Tulsa, Zone 2, 2 story 190,000 sq. ft. academic bldg., bell-bottom piers and grade beams, concrete block or clay tile walls, full bsmnt., Inv. No. Eng 34-066-53-49. $1,485,000. CD 8/29, under LB.

Tex., Beaumont — GYMNASIUMS — B.A. 11/26 — South Park Independent School Dist., two 157x175 ft. steel frame gymnasiums, $300,000. Plans deposit $25. Wallace B. Livesay, 820 N. 11 St., Beaumont, archt. CD 7/6/51.

† **Ia., Knoxville** — CAFETERIA — B.A. 12/9 — Veterans Admin., Munitions Bldg., Wash., D. C., Cafteria Bldg. 4 for Veterans Admin. Hospital incl. general construction, alterations, equipment, plumbing, heating, ventilating, electrical work, etc.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Fuel Economy Eng. Co.**, 510 New York Bldg., St. Paul, Minn., CA. $643,600. dock refueling facilities and fuel oil storage at Rapid City Air Force Base, Inv. 25-066-53-44, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Oct. 9. CD 10/15, under LB.

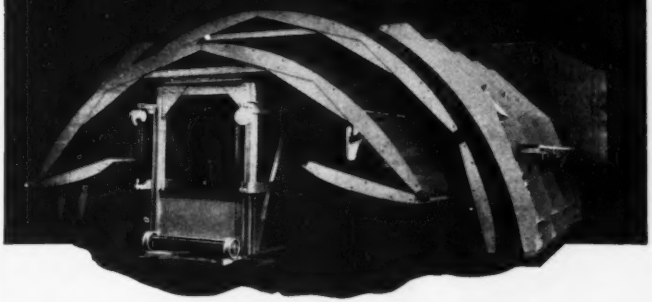
Cummins Constr. Co., Enid, Okla., LB $927,000, est. $905,000. outfall sewer and sewage disposal plant, ENID, OKLA. City, Enid, Okla. Bids Oct. 27. CD 10/8.

City, City Hall, Amarillo, Tex., Force Account. Approx. $75,000. addnl. sanitary sewer collection lines; $100,000, addn. segment of sanitary sewer collection lines, AMARILLO, TEX. CD 4/30.

City, City Hall, Amarillo, Tex., Purchase and Hire, $110,000. street imprvs., incl. segment of asph. surf., AMARILLO, TEX.

† **Acme Plumbing Co.**, 1907 Leopard St., Corpus Christi, Tex. LB $96,000. rehabilitation low pressure steam distr. services, Cabaniss Field, NOY 72211, CORPUS CHRISTI, TEX. Officer in Charge of Constr., Naval Auxiliary Air Station, Cabaniss Field, Corpus Christi, Tex. Bids Oct. 28.

FORM OPERATING CYCLE SLASHED
TO 300 MAN-HOURS PER STRUCTURE
ON THIS CONCRETE IGLOO JOB!



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Whether your concreting operations call for forming above or under ground, remember . . . Blaw-Knox engineers have years of experience in simplifying forming methods. That's why it's important to consult with Blaw-Knox first, in the preliminary planning stage, before bids are submitted. We will study your job and recommend the most suitable form design to save you time and money. Blaw-Knox Steel Form Consultation Service is ready to help you from preliminary planning to final pour. Write, wire or phone today.

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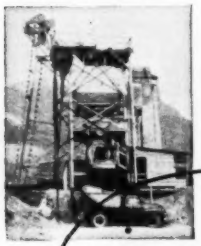
"THAT'S REALLY THE WAY TO HANDLE CONCRETE"

says L. G. (Bud) Waigand, Project Manager, Peter Kiewit Sons Co.



Two men ran this Noble batch plant with 28S Koehring mixer

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"We liked the Dumpcretes because they're fast," says Mr. Waigand, "and because they place equally well into forms, buckets or collecting hoppers. They're rugged too, and cause little downtime."

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Offices in Principal Cities

City, Harlingen, Tex. Force Account. CA **$45,000.** completing water main lines; CA **$35,000,** last of rehabilitation work, HARLINGEN, TEX. City, Harlingen, Tex. Sigler, Clark & Winston, Box 428, Weslaco, Tex., engrs. CD 11/5/51.

Dodds & Wedegartner, San Benito, Tex. LB **$259,000.** water purification plant, HARLINGEN, TEX. City, Harlingen, Tex. Bids Oct. 24. CD 10/3.

Moore Constr. Co., Odessa, Tex. LB **$35,907.** c.i. water lines incl. approx. 40,000 lin. ft. 4- to 12-in. pipe, MIDLAND, TEX. City, Midland, Tex. Bids Oct. 28. CD 10/17.

City, Midland, Tex. Force Account. CA **$70,000.** water distr. lines rehabilitation, MIDLAND, TEX. City, Midland, Tex. CD 9/19/52.

City, Midland, Tex. Force Account. CA **$75,000.** some imprvs., rehabilitation sanitary sewerage sys., MIDLAND, TEX. City, Midland, Tex. CD 9/19.

† **Bechtel Corp.,** 220 Bush St., San Francisco, Calif. LB **$512,463.** switchyard and appurtenant works for completion Falcon Power Plant, Falcon Dam, Spec. D-4700, ROMA, TEX. International Boundary & Water Comn., United States and Mexico, Box 1859, El Paso, Tex. Bids Oct. 24. CD 9/3.

Mitchell Darby Constr. Co., Box 369, McAllen, Tex. LB **$104,900,** est. $100,000. sewage plant, imprvs. outfall sewers, TAFT, TEX. City, Taft, Tex. Bids Oct. 27. CD 10/14.

Western Paving Constr. Co., 5105 Washington St., Denver, Colo., CA, **$194,419,** Street Paving District 189 c. conc. curb, gutter, sidewalks, grav. base course, b. conc. paving, necessary incidental imprvs., DENVER, COLO. City and Denver Co., City and County Bldg., Denver, Colo. Bids Oct. 22. CD 10/14.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Bureau Reclamation,** Dpt. Interior, Indianola, Neb. rejected bids Oct. 9, remodeling and initial constr. for Kansas River District HEADQUARTERS BLDGS. at McCook, Missouri River Basin Proj., Spec. DC 3797, NEBRASKA. CD 9/30.

▲ **Stearns-Roger Manufacturing Co.,** 1720 California St., Denver, Colo. CA **$4,775,000.** high-pressure absorption type gasoline refining PLANT, near ANGLETON, TEX., Southern Production Co., W. T. Waggoner Bldg., Fort Worth, Tex. and Humble Oil & Refining Co., Humble Bldg., Houston, Tex. CD 9/26.

Borger Independent School Dist., Borger, Tex. cancelled bids to have been opened Oct. 30, SCHOOL addn., BORGER, TEX. LB **$300,000.** CD 10/22.

Mid-West Constr. Co., Box 908, Midland, Tex. CA **$314,632.** SCHOOL CRANE, TEX. Crane Independent School Dist., Crane, Tex. CD 10/20, under LB.

River Oaks Lumber & Hardware Co., Inc., 2135 Westheimer St., Houston, Tex. Owner Builds. reconstr. LUMBER YARD STORAGE, HOUSTON, TEX.

† **P. R. Burn,** Box 1111, Las Cruces, N. M. LB **$142,323,** est. $100,000. ROCKET TESTING FACILITIES, Eng. 29-005-53-1, LAS CRUCES, N. M. Bids Oct. 23. CD 10/1.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Idaho**—TRANSFORMERS—B.A. 11/20—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., power transformers for Palisades Power Plant, Palisades Proj., Spec. DS 4812. Extended date. CD 10/1.

† **Washington**—B.A. 11/20—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, foundation exploration of Eagle Gorge Dam site on Green River, King Co., Inv. 53-31. CD 3/18/47.

† **Arizona-California-Nevada**—B.A. 11/25—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, delivering f.o.b. cars shipping point or f.o.b. cars Indio, Calif. pumping units, etc. for L-1 L-2 and L-3, Pumping Plants, Coachella Valley Distribution Sys., Unit 8 All-American Canal System, Boulder Canyon Proj. Spec. DS 3828 L. N. McClellan, ch. engr. CD 9/21/44.

† **Calif., Miramar**—MAINTENANCE SHOP, etc.—B.A. 11/25—Dpt. Navy, San Diego, aircraft maintenance shop and line bldg. at Naval Air Station, NOY 74051, Spec. 35086. $400,000. Plans deposit $40. CD 9/22.

† **Calif., Travis Air Force Base**—SEWAGE TREATMENT PLANT—B.A. 11/26—U. S. Eng., Wright Bldg., Sacramento, sewage treatment plant addn., Spec. 1670.

† **CALIFORNIA**—B.A. 3/3—Bureau P. Rds., Dpt. Commerce, 1101 Flood Bldg., San Francisco,

Fresno Co.—clearing, grading, etc. 4.192 mi. Huntington Lake, Sierra National Forest near S. Fork of Tamarack Creek 10 mi. E. of Shaver Lake, extending northerly.

BIDS ASKED—BUILDINGS

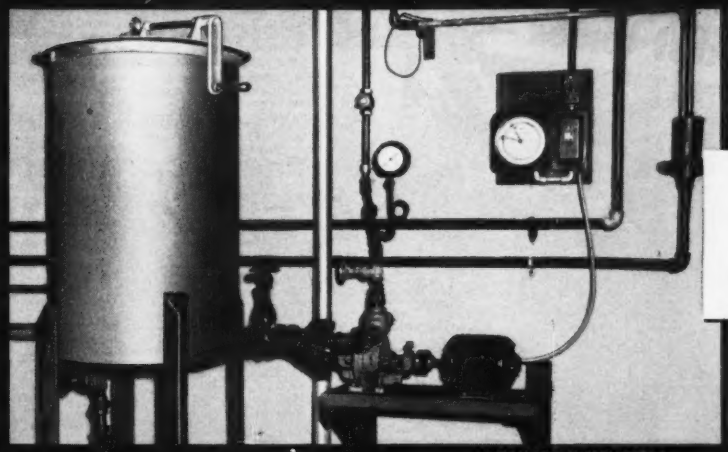
Calif., Lindsay—SCHOOL—B.A. 11/25—Lindsay Elementary School District, 250 N. Harvard Ave., Washington School. Plans deposit $25. CD 8/8.

Ore., Salem—CHURCH—B.A. 11/25—St. Paul's Episcopal Church, Salem, 27,800 sq.ft. concrete church. Plans deposit $25. James L. Payne, 182 S. Church St., archt.

Ore., Portland—SCHOOL—B.A. 11/26—School Dist. No. 1, 631 N.E. Clackamas St., Sacajawea Primary School. Plans deposit $25. Raymond Thompson, 631 N.E. Clackamas St., engr.

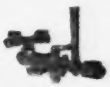
† **Ariz., Window Rock**—SCHOOL—B.A. 12/10—Bureau Indian Affairs, Dpt., Interior, Interior Bldg., 19 and

(Continued on page 126)

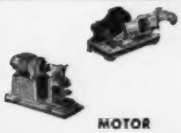


AUTOMATIC INTERMITTENT FEEDING

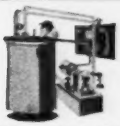
BY-PASS FEEDERS



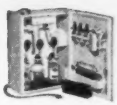
MECHANICAL CHEMICAL PUMPS



MOTOR OPERATED CHEMICAL PUMPS



AUTOMATIC CYCLE CONTROL



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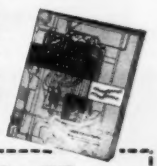

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(Continued from page 124)

C Sts. N. W., Wash., 25, D. C., school development incl. 4 room school, dormitories, dining hall, quarters, related facilities, at Kaibeto School, Kaibeto.

† **Idaho, Arco**—SHOP—Bids Asked—Idaho Operations Office, U. S. Atomic Energy Comn., Idaho Falls, 37x37 ft. masonry machine shop addn. National Reactor Testing Station. Plans deposit $10.

SOON LETS CONTRACT—HEAVY CONSTRUCTION

Calif., Millbrae—Wilsey & Co., Inc., 1126 Broadway, Burlingame, Soon lets contract, imprvs. in Lomita Park Subdivision No. 4.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **H. McGonigull,** 1612 Main St., Boise, Idaho, LB. $78,262, est. $89,026, cold storage bldg. Air Force Base, Inv. S 5318, MOUNTAIN HOME, IDAHO. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Oct. 28. CD 9/25.

Pittsburgh-Des Moines Steel Co., 901 Lane St., Seattle, Wash., CA. $38,984, steel reservoir, WEISER, IDAHO, City, City Hall, Weiser, Idaho. M. Lewis, Weiser, Idaho, city engr.

† **Macri & Hood Iron Works,** 1677 8 St., Oakland, Calif., CA. $34,446, metal partitions, doors, railings and structural and architectural metal work for Units A3, A4 and A9, Hoover Power Plant, Boulder Canyon Proj., Spec. DS 3791, ARIZONA, CALIFORNIA and NEVADA. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Sept. 25, awarded Oct. 16. CD 9/11.

ARIZONA State Hy. Dpt., Phoenix.

D. A. Flickinger, 1261 E. Cambridge St., Phoenix, Ariz., LB. $206,425, approach road 3.3 mi. Queen Creek tunnel, grading, draining, select material aggregate base, bit. plant mix, Pinal Co. Bids Oct. 7.

† **Stolte & Morrison-Knudsen Co., Inc.,** 8451 San Leandro St., Oakland, Calif., LB. $451,188 rehabilitation 63 buildings in hospital area and 15 warehouses, Spec. 1684, BEALE AIR FORCE BASE, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Oct. 23. CD 10/2.

† **Edward R. Siple Co.,** 2545 San Fernando Rd., Los Angeles, Calif., CA. $611,949, addnl. aviation fuel storage at Naval Auxiliary Air Station, NOY 27059, Spec. 29059, EL CENTRO, CALIF. Dpt. Navy, San Diego, Calif. Bids Sept. 9, awarded Oct. 20. CD 9/17, under LB.

▲ **John A. Artukovitch Sons, Inc.,** 16200 S. Atlantic Blvd., Paramount, Calif., LB. $1,053,725 constr. 21,410 ft. 54 and 45 in. pipe Victoria St., 223 St. Cross Feeder, LOS ANGELES, CALIF. Metropolitan Water Distr. of Southern California, 306 E. 3 St., Los Angeles, Calif. Bids Oct. 27. CD 10/14.

† **Haddock Engineers Ltd.,** 1616 Greenwood Ave., Montebello, Calif., CA. $982,611, U.S.A. security service operations bldg., Spec. ENG 04-353-53-27, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 715 S. Figueroa St., Los Angeles, Calif. Bids Oct. 15, awarded Oct. 24. CD 10/29, under LB.

▲† **Frederick & Kasler,** Box 46, Montalvo, and **Lowe & Watson,** 1148 "E" St., San Bernardino, Calif., CA. $1,386,439, roads and streets, Edwards Air Force Base, ENG 04-353-53-31, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Oct. 24. CD 9/29.

▲† **Erickson Constr. Co. & Campbell Constr. Co.,** 800 R St., Sacramento, Calif., LB. $1,398,683 vehicular processing bldg. at McClellan Air Force Base, Spec. 1667, SACRAMENTO, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. CD 6/6.

† **Del E. Webb,** P.O. Box 4066, Phoenix, Ariz., LB. $264,117 Addn. No. 2, air freight terminal bldg., Spec. 1668, TRAVIS AIR FORCE BASE, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Oct. 24. CD 9/30.

E. H. Peterson & Son, 5691 Dam Rd., Richmond, Calif., CA. $73,999, rein.-con. girder bridge across St. Johns River, located 4 mi. N. of Exeter, Tulare Co., VISALIA, CALIF. Tulare Co., Visalia, Calif. Awarded Oct. 14.

S. E. Pipeline Constr. Co., 13736 Mulberry Dr., Whittier, Calif., LB. $840,750, imprv. fire protection and water supply sys., Fred C. Nelles School for Boys, WHITTIER, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Oct. 22.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Ebasco Services,** 2 Rector St., New York, N. Y., CA. $18,000,000, OIL REFINERY to produce gasoline, kerosene, diesel fuel and asphalt, FLORENCE, ARIZ. Proven Oil & Refining Co., c/o L. N. Glasco, pres., M. & W. Tower, 311 S. Akard St., Dallas, Tex., CD 8/7.

W. E. Melena, The Dalles, Ore., CA. $150,000, concrete GRAIN ELEVATOR, PORT KELLEY, WASH. Walla Walla Grain Growers Assn., Walla Walla, Wash.

▲ **Raymond Concrete Pile Co.,** Equitable Bldg., Portland, Ore., CA. foundation piling;

Shirley G. Stone Co., Oswego St., Portland, Ore., CA. site preparation;

Pacific Car & Foundry Co., 120 W. Hudson St., Seattle, Wash., CA. structural steel;

Anning-Johnson Co., Inc., 1514 W. Van Buren St., Chicago, Ill., CA. gypsum roof deck, for aluminum fabrication PLANT addn., VANCOUVER, WASH. Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa. Total est. $1,217,600. CD 10/9/51.

O. R. Wayman, 3125 N.W. Front St., Portland, Ore., CA. $682,411. Peninsula Grade SCHOOL, PORTLAND, ORE. School Dist. No. 1, 631 N.E. Clackamas St., Portland, Ore. Awarded Oct. 27. CD 10/28, under LB.

† **Frank Capriotti,** 1725 E. 2 St., Reno, Nev., LB. $505,776, modification of 27 WAREHOUSES at Sierra Ordnance Depot, ENG 04-53-16, Spec. 1699, HER-

(Continued on page 130)

BETTER FRAGMENTATION...REDUCED BACKBREAK
with Du Pont "MS" Caps

LOOKING EAST along the keyway cut into solid rock for the new Liberty Dam on the Patapsco River, near Marriottsville, Maryland. Construction of the $4,476,000 dam is being done by The Arundel Corp., of Baltimore. Dam was designed under direction of Bernard L. Werner, Deputy Water Engineer, Bureau of Water Supply, Baltimore.

First-stage work involves cutting keyways for dam foundations—and leveling the 280-foot precipices on both sides of the river. Terracing the gorge into 21 steps requires good rock breakage to permit speedy removal of over 150,000 cubic yards of material and make way for next construction steps. Du Pont "Gelex" is the explosive used here with "MS" (Millisecond) Delay Electric Blasting Caps to assure maximum fragmentation and to reduce backbreak . . . important factors on jobs of this design.

The Liberty Dam, a gravity-type concrete structure 160 feet high, 480 feet long at the crest will *double* the raw water storage for the city of Baltimore. The lake formed by the dam will hold as much water as two reservoirs already in use—more than 43,000,000 gallons.

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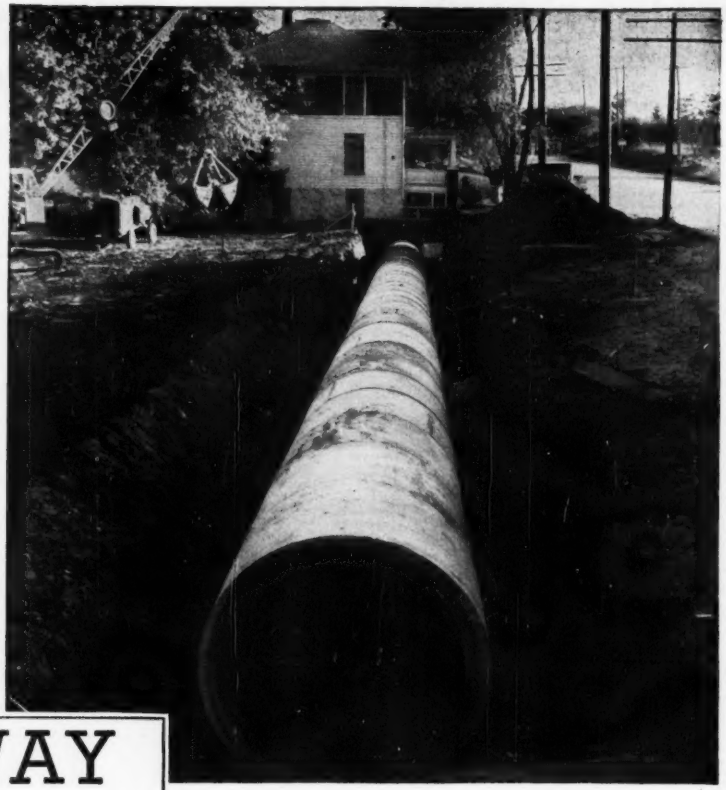
Maryland State Highway Contract, CL 303-2-715, CL 303-8-715; Westminster Bypass Relocated U.S. Route 140; Thomas Bennett & Hunter, Contractor, Westminster, Md.; Wm. F. Childs, Jr., Chief Engineer, Baltimore.



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	Drain Tile	Fire Clay
	Vitrified Clay Plate Lined Concrete Pipe	

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Ceco went to work . . . steel bars and welded wire fabric soon gave reinforcement to a mounting structure . . . steel windows were placed to assure more light and controlled ventilation . . . In record time another building was added to Chicago's industrial skyline.

Once again Ceco's service came through, and expanded facilities at Goss Printing Press Company met delivery deadlines to the nation's press. Ceco one-source service embraces precision engineered steel products, delivered and invoiced from one source, all adding up to faster, more efficient service at savings in money too.

More and more architects, engineers and contractors depend more and more on Ceco for help on building problems.

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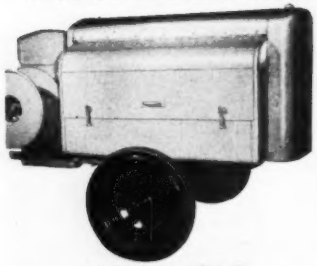

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(Continued from page 126)

LONG, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Oct. 24. CD 9/18.

▲ **Crown Constr. Co.**, 1231 S. La Brea St., Los Angeles, Calif., LB, $1,098,328, Pueblo Del Rio low-rent HOUSING, Project CA1 4-15, LOS ANGELES, CALIF. Housing Auth. of City of Los Angeles, 1401 E. First St., Los Angeles, Calif. Bids Oct. 30. CD 10/7.

▲ **Carson Park Builders**, Box 8086, Long Beach, Calif., Owner Builds. $1,628,800, 177 frame, stucco HOUSES, Studebaker Rd., Petaluman, Quigley and Ostrom Aves., LAKEWOOD, CALIF. Paul J. Duncan, 13310 Moorpark St., Sherman Oaks, Calif., archt.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Pacific Alaska Contractors, Inc.**, 2907 "A" St., Tacoma, Wash., CA. $714,300. director finder station, Spec. 31608, Cape Chiniak, ALASKA. 17th Naval Dist., Kodiak, Alaska. Bids Oct. 22. CD 10/28, under LB.

† **Wright Constr. Co.**, Anchorage, Alaska, LB $359,000. 4,125 sq. ft. concrete generator bldg., 2 story 20x68 ft., bsmnt., communications center addn., other AACS facilities at Communications Center Site, ENG 95-507-53-16, Elmendorf Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Oct. 24. CD 10/2.

† **Wright Constr. Co.**, Anchorage, Alaska, LB $67,443, est. $76,178, 860 sq. ft. concrete generator bldg., and other AACS facilities at remote receiver site. ENG 95-507-53-14. Elmendorf Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Oct. 23. CD 10/2.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Austin Tower Apartments**, c/o L. E. Baldwin, Inc., 1103 N. 36 St., Seattle, Wash. Day Labor. Approx. $1,000,000. 12-story APARTMENT, KETCHIKAN, ALASKA. E. W. Morrison, 719 2 Ave., Seattle, Wash., archt.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Alta., Cold Lake—DRILL AND RECREATIONAL HALL—B.A. 11/18—Defence Constr. Ltd., Kensington Bldg., Winnipeg, Man., steel drill and recreational hall at air base, Approx. $300,000. Plans deposit $100. K. F. Hurst, c/o owner, regional engr.

Alta., Edmonton—STEAM DISTRIBUTION SYSTEM—B.A. 11/18—K. F. Hurst, engr. c/o Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man., exten. steam distr. system to proposed No. 1 and No. 2 garages, R. C. E. stores, office and warehouse medical and dental stores and supplies depot, R.C.A.F. Station, Approx. $300,000. Plans deposit $100. CD 3/3/48.

Alta., Penhold—DRILL HALL, etc.—B.A. 11/18—Defence Constr. Ltd., Kensington Bldg., Winnipeg, Man., standard steel frame, wood truss drill hall and recreation hall for air force base. Approx. $300,000. Plans deposit $100. K. F. Hurst, c/o owner, regional engr.

N. S., Halifax—HEATING SYSTEM—B.A. 11/18—C. J. Connolly, engr. Defence Constr. Ltd., 1032 Gottingen St., installing low pressure heating system in Drill Hall, Halifax Armouries. $125,000. Plans deposit $100.

Que., Montreal—STEAM DISTRIBUTION SYSTEM—B.A. 11/18—M. P. McAndrew, engr. Defence Constr. Ltd., 1247 Guy St., steam distr. system (supply) depot, 100 vehicle garage and R.C.E.M.E. Workshop, Job. 2285, $300,000. Plans deposit $100.

BIDS ASKED—BUILDINGS

Ont., Hamilton—CORNELL BUILDING ADDNS.,etc—B.A. 11/19—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Cornell Building alterations, addns., 35-43 Catherine St. $300,000. Plans deposit $50. E. A. Gardner, c/o owner, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Standard Gravel & Surfacing of Canada Ltd., 5340 First St. W., Calgary, Alta., CA, $106,080, rehabilitation of drainage, CALGARY, ALTA. Govt. of Canada Dpt. National Defence ARMY Cartier Sq., Ottawa, Ont. Defence Constr. (1951) Ltd., 400 Kensington Bldg., Winnipeg, Man., engr.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Toronto, Ont.

H. J. McFarland Constr. Co., Ltd., Box 559, Picton, Ont., CA, Est. $500,000, 10.8 mi. new road near Port Hope east of Hy. 35 grading and structures, Port Hope;

Harvey Constr. Co. Ltd., 40 Eglinton Ave. E., Toronto, CA, $1,000,000, grading, structures 3 mi. Hy. 38 east dual highway near Kingston. Bids Sept. 5, awarded Oct. 22. CD 8/19.

▲ **Hughes Constr. Co. Ltd.**, 365 Rogers Rd., Toronto, Ont., CA, $1,500,000, three story L-shaped rein. con. frame, brick air force reserve bldg., TORONTO, ONT. Defence Constr. Ltd., 40 Eglinton Ave. E., Toronto, Ont. Bids Oct. 7, awarded Oct. 28. CD 9/23.

Lakeshore Constr. Ltd., 187 Cartier St., Pointe Claire, Que., CA, $82,631, road repairs, POINTE CLAIRE, QUE. Municipality, Pointe Claire, Que. R. Labrosse, Town Hall, town engr.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Model Homes Ltd.**, 7 Smithfield St., Winnipeg, Man., Owner Builds, $2,500,000. 200 DWELLINGS of bungalo and 2 story type, Kildonan Avenue Area, WEST KILDONAN, MAN.

Patterson-Alexander Ltd., 68 Holland Ave., Ottawa, Ont., CA, $75,367, 2 story, structural steel, brick, concrete automobile parts PLANT, Laurier Ave. W. and Kent St., OTTAWA, ONT. Canadian Tire Corp., Laurier Ave. W. and Kent St., Ottawa, Ont. Burgess & McLean, 53 Queen St., Ottawa, Ont., archts.

J. R. Robillard, 5245 Van Horne Ave., Montreal, Que., LB, $404,938, SCHOOL and RESIDENCE, MUNICIPAL SCHOOL, VANDREUIL, QUE. School Bd., E. Souve, secy., Vandreuil, Que. Bids Oct. 17.

Times-Herald Ltd., Moose Jaw, Sask., Day Labor and Separate Contracts, $85,000 newspaper and printery PLANT, MOOSE JAW, SASK. CD 7/9.

Proposed Projects

WATER SUPPLY

Ark., Berryville—City, water treatment plant, river intake structure, $200,000, Max A. Mehlburger, Pyramid Bldg., Little Rock, consult. engr.

Ga., Warner Robins—City, WW imprvs. $600,000. Vinson & Co., 80 Linden Ave. N.E., Atlanta, Ga., consult. engrs.

Mo., Grandview—Water Dist. 1, c/o A. C. Gately, mgr., voted $430,000 bonds Oct. 20, water sys., enlragement, larger mains, 85 St. to Cass Co. line and Kansas State line about 3 mi. east, Grandview, Hickman Mills, Holmes Park, etc. C. A. Haskins, Finance Bldg., Kansas City, Mo., consult. engr. CD 10/17.

▲ **N. C., Greensboro**—City, City Hall, WW imprvs. $1,400,000. CD 11/29/51.

▲ **Okla., Lawton**—City, voted bonds, WW exten. $1,728,000. W. B. Hendrick, 216 Koehler Bldg., consult. engr. CD 10/14.

Tenn., Benton—City, WW sys. $230,000.

Tex., Eastland—Eastland Co. Water Supply Dist., c/o C. B. Pruet, pres. Bd., Eastland, earthern dam on Leon River with 15 mi. water supply lines from there to Eastland and Ranger. $800,000. Freese & Nicholls, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 5/13.

SEWERS, WASTE DISPOSAL

▲ **Ala., Birmingham**—City, City Hall, $3,000,000 bond election Feb. 1, storm sewers.

Ga., Warner Robins—City, sanitary sewers, Imprvs., $600,000. Vinson & Co., 80 Linden Ave. N.E., Atlanta, consult. engrs.

▲ **Ill., Chicago Heights**—Bloom Township Sanitary Dist., 307 E. 14 St., sewage treatment works addns., 3 aeration tanks, sludge filter bldg., outside pumping, tunnels, settling tanks, pumping station, $1,667,000. Consoer Townsend & Assocs., 351 E. Ohio St., Zone 11, consult. engrs. E. Harry Ashdown, 1212 Edgewood Ave., Chicago Heights, staff engr. CD 4/23.

Kan., Newton—City, R. L. Chandler, engr., 2 mi. 8 and 12 in. vitr. clay sanitary sewers, exten. Broadway to Sand Creek disposal plant, $100,000.

Kan., Quindaro Twp.—Twp. Bd., c/o E. N. Alvey, clk., 5021 Welborn Lane, Welborn, voted $250,000 bonds Oct. 15, sanitary sewers, sewage treatment plant, $107,000, C. A. Haskins, Finance Bldg., Kansas City, Mo., consult. engr. CD 2/26/47.

Mo., Grandview—City, c/o J. J. Taylor, mayor, sewerage sys., treatment plant, $400,000, C. A. Haskins, Finance Bldg., Kansas City, Mo., consult. engr. CD 8/14/46.

Mo., Independence—City, Mayor Robt. P. Weatherford Jr., $825,000 bond election In January, sewer dist. with 3 div. CD 10/13.

▲ **Neb., Omaha**—City, City Hall, 18 and Farnam Sts., completed survey long range program sewer. $15,376,000. Henningson, Durham & Richardson, Standard Oil Bldg., consult. engrs. CD 10/31/51.

N. C., Greensboro—City, City Hall, Sanitary sewer imprvs. $350,000.

O., Dayton—City, City Hall, Interceptor sewer along Miami River from Wolf Creek to Summit St. $114,526. John Hale, city engr. CD 10/23/45.

▲ **O., Cincinnati**—City, City Hall, Duck Creek Sewer from Little Duck Creek to Paxton Rd. $650,000 sewer from point 2,800 ft. west of Vine St. to Paddock Rd. $395,000. T. J. Montgomery, city engr.

O., Piketon—Village, sewerage sys. $250,000. Snyder, McLellan & Watson, Hillsboro, Ind., consult. engrs.

▲ **R. I., Cranston**—City, Sewer Dpt., City Hall, sewer exten., approx. 60 mi. trunk line, pumping stations, etc., Meshanticut Park. $5,000,000. Fay Spofford & Thorndike, 11 Beacon St., Boston, Mass., consult. engrs. CD 10/10.

S. C., Manning—City, addnl. sanitary sewer facilities. $250,000. Wm. B. Sykes, Manning, and Palmer & Malone, Sumter, consult. engrs. CD 10/5/45.

BRIDGES

Ala., Birmingham—City, City Hall, $1,900,000 bond election Feb. 1, underpass, 13 St.

▲ **IDAHO**—State Hy. Dpt., Boise.

Bonner Co.—bridge over Lake Pend Oreille, with main structure of precast concrete girder, Sandpoint. $3,000,000. E. V. Miller, state hy. engr.

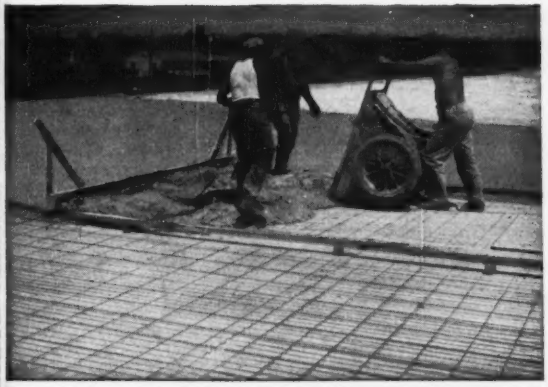
(Continued on page 133)

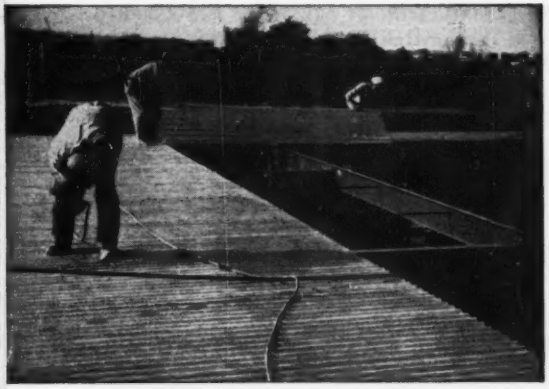
COFAR

. . . Combined reinforcement and form for concrete floors and roofs in a single product.

CORRUFORM

. . . the light-weight permanent steel form for concrete floors and roofs.





THEY'RE ALL IN THE FAMILY

Here are Four Granco Products for Your Needs—Pre-formed Steel to make your jobs stronger, better . . . faster

And "tough-temper" steel is the answer. Yes, high-strength, light-weight steel is one of the reasons that the Granco family of four building aids do a better job for you. For Granite City Steel, parent-company of Granco Steel Products Company, has developed a specialized steel to fit right in the building products picture.

Because it's manufactured from a low-carbon steel to begin with, Granco "tough-temper" does not require critical alloying to gain its high tensile strength. Instead, controlled cold-rolling, with strain hardening as the result, gives high and unusual physical properties. The structure of the steel itself actually changes . . . the crystalline elements realign . . . to produce a steel with a *minimum* yield point *above* 80,000 psi; and an ultimate of *over* 100,000 psi. This is *tough* steel!

Steels like this, fabricated into products like those illustrated on this page, mean more than marks on a blueprint. For construction people they mean simplified and more economical construction, savings in materials and labor. To your clients they mean better structures as an end-result.

We'll be glad to tell you more about any Granco product you are interested in, just write Department 25-6, you will get a speedy answer. For helping you is the most important part of our job. It's our way of saying "thanks" for specifying Granco.

TUFCOR

. . . deep-corrugated, tough-temper steel for the construction industry.

GRANCO ROOF DECK

. . . the rotary-press formed flat-top roof-decking.

GRANCO STEEL PRODUCTS CO.

(Subsidiary of Granite City Steel Co.)
Granite City, Illinois

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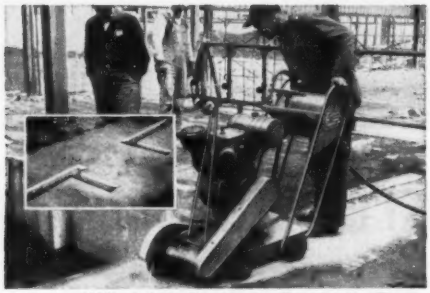
SAWING BEFORE BREAKING SAVES TIME AND MATERIAL WITH PERFECT FINISHED JOB — STOPS IRREGULAR EDGES — HIDDEN FRACTURES



Sawing 6000' of channel in concrete floor for installing cove tile base with Model C-75 Clipper. *John J. Keeley, General Contractor, East St. Louis, Ill.*

Sawing 4½" deep to trim catwalk in a Filtration Plant with the electrically powered Clipper C-20. *E. & E. J. Pfotzer, Washington, D. C.*

Sawing Contraction Joints in concrete slab with Model C-130. Eliminates irregular hand formed joints. *Austin Co., Cleveland, Ohio.*

CLIPPER CONCRETE SAW— CASE HISTORY STUDY

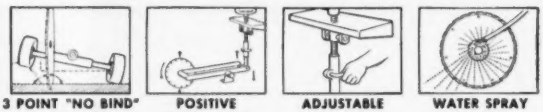
of a Building Contractor

A Clipper Concrete Saw is fully as practical to own as either a wood or masonry saw. The surrounding pictures illustrate everyday job uses and show the way to increased profits by Sawing Before Breaking or by Sawing Contraction Joints.

Now saw the exact size openings for conduit, air, water or gas lines. No longer is it necessary to breakout a patch or trench twice the size necessary for pipeline or machinery base installations. Saw the minimum area only - the breakout is confined! Perform your next job for a client better, faster and at more profit than ever before.

SAWING a floor opening in four-inch concrete with the Model C-130 for installation of machinery. *August Klinge & Sons, Kansas City, Mo.*

CONCRETE SAWING ECONOMY AND SPEED ARE ASSURED WITH THESE PATENTED CLIPPER FEATURES!



3 POINT "NO BIND" SUSPENSION | POSITIVE SCREW FEED | ADJUSTABLE DEPTH LOCK | WATER SPRAY SYSTEM

. . . ever see a Clipper Concrete saw in Action? For downright SPEED, EASE and SMOOTHNESS of operation it's really something to see.

You'll recognize that Clipper Concrete Saws are designed for SIMPLE—FOOLPROOF—DUSTLESS performance. Dashboard controls—perfect balance—floating three point blade suspension**—"job-rated" power plants ...all combined for concrete and asphalt cutting beyond all expectations.

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CLIPPER DIAMOND BLADES

A complete selection of blade types and specifications for every sawing job . . . Saw any aggregate concrete or asphalt with economy and speed!

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MODEL C-130
One of 5 Models
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3-POINT "No-Bind" SUSPENSION

Stops binding—stops unnecessary blade wear—assures full power to the blade.

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10-C

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COMPANY _____

ADDRESS _____

CITY _____ STATE _____

WRITE TODAY FOR COMPLETE DETAILS

(Continued from page 130)

Ill., Chicago—City, City Hall, viaduct on Roosevelt Rd., rehabilitation, East End. $400,000.

Okla., Dewey—City, City Hall, railroad overpass on Washington St. $100,000. W. F. Shaw, Public Service Bldg., Tulsa, consult. engr.

Que., Shawinigan Falls—City, F. Roy, mayor, bridge from City to Neville Island, $800,000. Robert Dorion, c/o owner, engr.

STREETS AND ROADS

Okla., Tulsa—City, City Hall, access highway on N. Denver Ave. $120,000. W. W. Wooten, city engr. CD 3/5.

Tenn., Trenton—City, street imprvs. $100,000. Jackson Eng. Co., Nolan Bldg., Jackson, consult. engrs.

Tex., Lubbock—City, City Hall, asph. on caliche surf. 34th St. Avenue H to Avenue Q, incl. grading, drainage, structures. $200,000.

Tex., Rockdale—City, street imprvs. and paving, incl. some new streets. $287,400. Dave Williams, city engr.

EARTHWORK, WATERWAYS

† **Ind., Vincennes**—U. S. Eng., 830 W. Broadway, Louisville, 1, Ky., Section A, Part 2, 1,912 ft. lin. ft. steel sheet piling and concrete type flood wall, 1,494 lin. ft. levee, 6 closure structures, 30 8-in. relief walls, 2,000 lin. ft. collector drains, storm sewers, etc. Approx. $500,000.

▲† **Kentucky**—U. S. Eng., 303 U. S. Court House, 7 and Broadway, Nashville, Tenn., Pineville Local Protection Proj. approx. 3,500 ft. compacted earth levees, 3,600 ft. concrete floodwalls, 150,000 g.p.m. pumping plant, facilities. $1,475,000.

† **Kentucky**—U. S. Eng., 830 W. Broadway, Louisville, flood protection limestone Creek Barrier, exten., approx. 1,000 ft. earth levee up to 45 ft. high, 500 ft. rin.-con., wall 21 ft. high, sewers and drainage facilities, 1,100 ft. 16 ft. road over levee, $500,000.

AIRPORTS

† **Fla., Miami**—SHOP, etc.—National Airlines, 324 N. W. 27 Ave., overhaul shop and warehouse, Miami International Airport. $1,060,595. CD 8/27.

Mich., Sagniaw—ADMINISTRATION BLDG.—City, Tri-City Airport Comn., 2 story, part bsmnt., masonry admin. bldg., Tri-City Airport, Sagniaw, Midland and Bay City, $175,000, Merton E. Crandall, Midland, consult. engr. CD 8/3/51.

Mich., St. Joseph—AIRPORT—State, A. F. Rutt, Michigan Aeronautics Comn., runways, Twin Cities Airport. $210,000. L. C. Andrews, ch. engr.

▲† **O., Dayton**—AIR BASE—U. S. Eng., 830 W. Broadway, Louisville, 3, Ky., 100,000 sq. ft., masonry, steel electronics maintenance bldg., with air-conditioning, utilities, except heating, Approx. $1,000,000; 240,000 sq. ft. concrete, masonry warehouse, roads and utilities, $200,000; expansion of steam plant, 2 boilers incl. coal and ash handling equip. and accessories, $200,000, all foregoing at Gentile Air Force Depot.

Okla., Tulsa—HANGAR—City, City Hall, plans by Leon Senter, Philtower Bldg., Airport Hangar No. 12. $160,000. CD 1/12/45.

LATIN AMERICA

Mexico, Guadalajara—Mexican Govt., (Srla. de Comunicaciones y Obras Publicas) Mexico City, plans general post office-telegraph bldg. $500,000.

▲ **Mexico, Poza Rica**—Petroleos Mexicanos, Juarez 104, Mexico City, plans structural iron factory. $1,000,000.

▲ **Mexico, Tlalnepantla**—National Railways of Mexico, Mexico City, plans 5,000 home colony for railroaders. $1,000,000.

PUBLIC BUILDINGS

▲ **Ala., Birmingham** — SCHOOL — City, City Hall, $4,000,000 bond election Feb. 1, school imprvs. CD 8/25/44.

Ala., Brookside—HOUSING—Rural Housing Auth. of Jefferson Co., Court House, Birmingham, plans by Charles H. McCauley, Jackson Bldg., Birmingham, 88 housing units. $900,000. CD 4/1.

Conn., Bridgeport—HOMES—City Public Welfare Office, 835 Washington St., Hillside Homes, imprv. and modernize, 2 story, bsmnt., 60x210 ft. with 2 wings U-shaped, cinder blocks, brick, imprv. power plant and heating sys., bridges to connect old buildings, etc. Bond St., $2,228,018. Joseph C. Weiman, c/o owner, consult. engr.

▲ **Del., Wilmington**—SANATORIA—Delaware State Bd. of Health, Dover, plans by G. Morris Whiteside 2nd, du Pont Bldg., Wilmington, Brandywine and Edgewood Sanatoria addns., vicinity of here. $2,343,012.

▲ **Fla., Miami**—SCIENCE, etc.—Dade Co., Court House, plans by Steward & Skinner, 223 S.E. 1st St., medical science bldg., $1,100,000; outpatient bldg. $860,000, at Jackson Memorial Hospital.

▲ **Ind., Jasper** —ELECTRIC PLANT IMPRV.—City, Mayor Edward J. Lorey, imprv. electric plant, $2,500,000. Stanley Eng. Co., Muscatine, Ia., consult. engr.

La., New Llano—HOUSING—New Llano Housing Auth., c/o O. L. Pool, chn., New Llano, plans by Joseph H. Gaylord Co., 1423 Oil & Gas Bldg., Fort Worth, Tex., 125 rural non-farm dwelling units, $500,000.

La., Vinton—DWELLINGS—Vinton Housing Auth., c/o Robt. L. Lagnion, chn., plans by Matkin & Fitch, Orange, Tex., 175 dwelling units, $750,000.

Mich., Dowagiac—SCHOOL—Bd. Educ., Dowagiac voted $684,000 bonds elementary school, school to replace Oak Street School, McKinley School addn., Binda & Haughey, 510 Post Bldg., Battle Creek, archts. CD 9/19.

Minn., Faribault—SCHOOL—Bd. Educ., R. W. Klemer, clk., $825,000 bond election Nov. 20, grade school, 2 grade school addns. Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, archts. CD 5/7.

Mont., Missoula—AUDITORIUM-PAVILLION—State, Bd. Examiners, Helena, plans by Brinkman & Lennon, Kalispell, combination auditorium-pavillion Montana State University. $750,000. CD 10/9.

▲ **N. Y., Bellerose**—HIGH SCHOOL—Co-ordinator of School Const., 49 Flatbush Ave. Exten., Brooklyn, Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical and lighting fixtures for new Junior High School 172, 81 Ave. and 256 St., $2,947,200. Plans deposit $30 general const.; $8 each plumbing and drainage, heating and ventilating; $9 electrical work and lighting fixtures. CD 7/11

▲ **N. Y., New York**—YOUTH HOUSE SHELTER—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Kahn & Jacobs, 2 Park Ave., Zone 16, Proj. WL-26, youth house shelter for delinquent boys, Spofford Ave. $5,000,000.

Okla., Ponca City—POWER PLANT—City, Ponca City, voted bonds, power plant exten. $550,000. C. E. Norton, c/o owner, engr.

Pa., Youngsville—SCHOOL—School Dist. of Youngsville, Youngsville, plans by E. S. Hanna & D. Fuller Stewart, Meadville, 2 story brick, block grade and high school addn. $650,000.

▲ **Tex., Austin**—DORMITORIES—University of Texas, c/o Bd. Regents, Administration Bldg., plans by Robert Leon White, c/o owner, university archt., 176-women dormitory, $1,200,000; 308-men student dormitory, $1,100,000; 312 law student dormitory, $967,000; four double-unit men's group housing bldgs., $488,000; 450 capacity cafeteria, $300,000. CD 10/20.

Tex., Velasco—DWELLING—Velasco Housing Auth., c/o Charles Lasseter, Jr., chn., Velasco, plans by Boese & Harkrider, 312 Texas & Pacific Bldg., Forth Worth, 200 dwelling units. Approx. $800,000.

Va., Chincotague—HIGH SCHOOL—Accomack County School Bd., Accomack, plans by Dixon & Norman, 1103 E. Main St., Richmond, 1 story, masonry high school. $500,000.

Man., Flin Flon—CIVIC CENTER—Syndicate c/o Civic Memorial Centre Com., Lorn Ferg, pres., Flin Flon, civic centre, incl. swimming pool and auditorium. $500,000.

▲ **Man., Winnipeg**—POST OFFICE, etc.—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., plans by Green, Blankstein, Russell & Assocs., 222 Osborne St. N., Winnipeg, Man., and E. A. Gardner, ch. archt., c/o owner, 4 story, sub-bsmnt., post office, garage, superstructure 6-8 stories for government offices, helicopter station on roof with housing for two helicopters. $3,000,000. CD 6/24/48.

COMMERCIAL BUILDINGS

Ala., Montgomery—SHOPPING CENTER—Normandale Development Co., Bell Bldg., shopping center, $500,000.

D. C., Wash.—SHOPPING CENTER—Riggs Investment Corp., 1701 Eye St. N.W., plans by Corning & Moore, 1726 M St. N.W., shopping center, 3 St. and Chillum Pl. on Riggs Rd., N.E. $600,000.

▲ **Fla., Jacksonville**—OFFICE—Prudential Life Insurance Co., 763 Broad St., Newark, N. J., plans by Kemp Bunch & Jackson, Florida Theatre Bldg., Southeastern Office bldg., $10,000,000. CD 7/17.

Ind., Richmond—RESIDENCE HALL—Earlham College, Richmond, brick, steel men's residence hall, $600,000.

Kan., Topeka—HOME—Methodist Home for Aged, c/o E. R. Stants, dir., 3114 W. 15 St., plans by Glover & Newcomb, 3101 Huntoon Rd., home addn., $750,000. CD 8/2/50.

Mass., Webster—HOSPITAL—Webster District Hospital, Geo. White, chn. Bldg. Comn., Thompson St., plans by Atwood Assoc., 687 Boylston St., Boston, and L. W. Briggs Assoc., Inc., 90 Park Ave., Worcester, assoc. archts., 2 story hospital, Thompson St. $750,000.

Mo., Kansas City—OFFICE—J. F. Pritchard & Co., c/o M. Kenersen, ch. engr., 908 Grand Ave., plans by Edw. W. Tanner & Assoc., 310 Ward Parkway, Kansas City, Mo., 3 story, bsmnt. office, $702,400. CD 3/25/52.

Mo., Kansas City—HOSPITAL—Trinity Lutheran Hospital, 30 and Wyandotte St., plans by Emil O. Bayerl, 20 W. 9 St., hospital addn. $500,000.

▲ **Mont., Columbia Falls**—HOUSING—Anaconda Copper Co., Columbia Falls, housing for employees, 38 acre site, $2,000,000.

N. H., Hampton—RESIDENCES—Kelly Corp., 25 Forest St., Arlington, Mass., 150 one-story wood frame residences. Approx. $550,000.

▲ **N. Y., New York**—APARTMENT—Palisades Apartments, Inc., 18 E. 53 St., Zone 22, plans by Henry Kibel, 18 E. 53 St., Zone 22, 12 story apartment, Palisade Ave., south of Kappock St. $1,000,000.

▲ **O., Columbus**—APARTMENT—Webb Robinson & Assoc., 374 N. Virginia Lee Rd., apartment on 7-acre tract bounded by Clifton, Brunson, Woodland and Norfolk & Western R.R. to be known as Clifton Parks Apartments. $1,750,000.

▲ **Pa., Glenside**—DORMITORY, etc.—Beaver College, Glenside, plans by Sydney E. Martin, 117 S. 17 St., Phila., dormitory, chapel, gymnasium, swimming pool, cultural arts bldg., apartment house for faculty and president's home. $4,000,000.

▲ **Pa., Phila.**,—SHOPPING CENTER—River Park Regional Shopping Center, c/o Wm. J. McCarter & Co., Liberty Trust Bldg., plans by Welton Becket, consult. engr.-archt., 5657 Wilshire Blvd., Los Angeles, Calif., shopping center, incl. 12 story Presidential Hotel, 12 story office bldg., Schuylkill Expressway and City Line. $40,000,000.

▲ **Tex., Dallas**—CONVENT—Holy Trinity Convent, 3822 Gilbert St., plans by Magulo & Quick, 336 Temple Bar Bldg., Cincinnati, O., 170,000 sq. ft. masonry convent. $1,250,000.

Tex., Dallas—OFFICE—Insurance Co. of Texas, 3306 Main St., plans by Mackie & Kamrath, 2713 Ferndale St., 5 story office. $750,000. CD 8/28.

Vt., Burlington—HOTEL—Hotel Breton, c/o Mrs. Mary Ange Rouillard, Burlington, plans by Design, Inc., 906 Sidney St., St. Louis, Mo., hotel. Approx. $700,000.

▲ **Va., Falls Church**—APARTMENT—Luria Bros., 2300 Wilson Blvd., Arlington, plans by Keyes, Smith, Satterlee & Lethbridge, 3 duPont Circle, Wash., D. C., 2 story, masonry 247 apartment units. $2,000,000.

▲ **Va., Richmond**—DORMITORY—Virginia Methodist Orphanage, W. Broad St., dormitory, $1,200,000.

Wis., Milwaukee—HOSPITAL—Columbia Hospital, 3321 N. Maryland Ave., Zone 11 plans by Eschweiler & Eschweiler, 720 E. Mason St., Zone 2, hospital imprvs., addns. $815,000.

▲ **Ont., Toronto**—APARTMENT BLOCK—International Realty Co., 190 Yonge St., 14 story, 1,000 suite apartment block, Yonge and Alexander Sts. $8,000,000.

INDUSTRIAL BUILDINGS

Ga., Rome—PLANT—Fox Mfg. Co., Rome, plant addn. $500,000.

▲ **Ind., Madison**—GENERATING PLANT—Indiana-Kentucky Electric Corp., c/o P. Sporn, pres. American Gas & Electric Co., 30 Church St., New York 8, N. Y., 1,200,000 kw generating plant. Site selected. $280,000,000. CD 8/22, under Indiana.

Mass., Boston—WAREHOUSE—Massachusetts Wholesale Food Terminal, Inc., c/o Thomas Worcester, Inc., archt.-engr., 45 State St., Boston, two 2 story, 100x778 ft., 75x350 ft., rein.-con. cooperative bldgs. for meat warehouse, Southampton St. and Mass. Ave., $500,000.

▲ **Minn., St. Paul**—WAREHOUSE—Fairway Foods, Inc., C. O. Johnson, mgr., 2285 University Ave., plans by Toltz, King & Day, 1509 Pioneer Bldg., Minneapolis, 1 story, brick, 230,000 sq. ft. warehouse, Como Ave. between Fifield and Stella Aves., $1,000,000.

▲ **N. J., West Trenton**—AIRCRAFT PLANT—Chase Aircraft Co., Inc., DeCou Ave. and Parkway Ave., Trenton, aircraft plant. $1,867,850. Milton Godfrey, c/o owner, engr.

Tex., Bryan—PLANT—International Shoe Co., 1059 Washington Ave., St. Louis, Mo., Unit 2, shoe mfg. plant unit, $350,000; Unit 3, shoe mfg. plant unit and shoe findings, $500,000. Brown & Root, Inc., Box 3, Houston, consult. engr.

▲ **Tex., Dumas-Sunray**—PLANT—Phillips Chemical Co., Bartlesville, Okla., nitric acid plant. $1,684,000.

▲ **Tex., El Paso**—PLANT—Catalytic Cracker Plant, El Paso, solvents production plant, Incl. 9,000 bbl. daily capacity crude oil products unit. $15,000,000.

Tex., Etter—REFINERY—Kerr-McGee Oil Industries, Inc. Etter, natural gasoline production refinery. $746,250.

▲ **Tex., Houston**—PLANT, etc.—Houston Oil Field Materials Co., 1524 Maury St., plans by Harvin C. Moore, 2006 W. Alabama St., integrated plant, $1,500,000; warehousing, shops, $1,000,000. CD 10/14.

▲ **Tex., Orange**—PLANT—E. I. duPont de Nemours & Co., Orange, storage facilities, hexamethylene diamine, $1,391,000; storage facilities for adipic acid, $2,158,000. CD 2/13.

▲ **Tex., Pasadena**—PLANT—Phillips Chemical Co., Pasadena, plant to mfg. methyl-vinylpyridine. $3,119,000.

▲ **Tex., Sweetwater**—PLANT—Lone Star Cement Corp., R. A. Hummell, Bd. Chn., 1st. Natl. Bank Bldg., Dallas, doubling capacity existing cement mfg. plant at Maryneal, near here. $13,000,000.

▲ **Va., Fairfax**—RESEARCH CENTER—Westinghousee Air Brake Corp. (Melpar Div.) Wilmerding St., Pittsburgh, Pa. research center in Fairfax Co., near here. $2,000,000.

Wyo., Cheyenne—CRACKING UNIT—Frontier Refining Co., S. E. of Cheyenne, Cheyenne, boosting capacity existing catalytic cracking unit, $717,000.

▲ **Ont., Dundas**—PLANT UNIT—Steetley of Canada Ltd., N. M. Reech, pres., Dundas, plant unit. $2,000,000.

▲ **Ont., Port Arthur**—GRAIN ELEVATOR—Saskatchewan Pool Terminals Ltd., Public Utilities Bldg., grain

elevator, $3,000,000. C. D. Howe Co. Ltd., Public Utilities Bldg., engr. CD 10/3.

UNCLASSIFIED

Ala., Birmingham—AGRICULTURAL BLDG.—City, City Hall, $400,000 bond election Feb. 1, agricultural bldg. at Fairgrounds.

Ala., Birmingham—STREET LIGHTING SYSTEM—City, City Hall, $300,000 bond election Feb. 1, Northside St. lighting sys.

Ark., Paragould—GENERATING and ELECTRICAL DISTRIBUTING SYSTEM IMPRVS.—City, improv. in city's generating and electrical distributing system, $400,000. J. E. Flanders Co., Jefferson City, Mo., consult. engrs. CD 6/16/44.

Kansas—RURAL DISTRIBUTION LINES—Norton-Decatur Electric Co-operative Co., Norton, 388 mi. rural distr. lines, Norton, Decatur, Phillips, Rooks, Graham and Sheridan Counties. $575,000. Raymond H. Reed & Co., Columbus, Neb., consult. engrs. CD 10/4/49.

N. H., Manchester—TELEVISION STATION—New Hampshire Broadcasting Inc. (WFEA) 286 Franklin St., television station, $477,000. John H. Mullaney, 1757 K St. N.W., Wash., D. C., consult. engr.

N. C., Asheville—TELEVISION STATION—Skyway Broadcasting Co. (WLOS), Box 2389, Battery Park Hotel, television station, $441,000. John Creutz, Bond Bldg., Wash., D. C., consult. engr.

Okla., Oklahoma City — SWIMMING POOLS — City, City Hall, plans by R. D. Stone, 1225 Linwood St., 8 swimming pools, bathhouse in various parks. $675,000. CD 10/15.

Okla., Tulsa—BATHHOUSE, etc.—City, City Hall, plans by Leon Senter, Philtower Bldg., bathhouse and swimming pool. $275,000. CD 3/5.

Ore., Eugene—TELEVISION STATION—Lane Broadcasting Co. (KORE) 2593 S. Willamette St., television station, $223,000. Alvin H. Barnard, 3026 N.E. 122 Ave., consult. engr.

Ore., Portland—TELEVISION STATION—Mt. Scott Telecasters, Inc. (KGON), Box 391, Oregon City, television station, $306,000. D. D. Loomis, 3636 S.E. Glenwood St., consult. engr.

Ore., Portland — TELEVISION STATION — Oregon Television, Inc., 1003 Loyalty Bldg., television station, $413,000. John H. Mullaney, 1757 K St. N.W., Wash., D. C., consult. engr.

Ore., Portland—TELEVISION STATION—Pioneer Broadcasters, Inc. (KGW), 1320 S.W. Broadway, television station, $530,000. Harold C. Singleton, 2073 S.W. Park St. consult. engr.

Ore., Salem — TELEVISION STATION — Oregon Radio, Inc. (KSLM) Senator Hotel, television station. $203,000. Alvin H. Barnard, 3026 N.E. 122 Ave., Portland, consult. engr.

Pa., Harrisburg—TELEVISION STATION—WABX, Inc., 111 Blackberry St., television station, $299,000. H. O. Bishop, 2638 Lexington St., consult. engr.

Pa., Pittsburgh—TELEVISION STATION—WWSW, Inc., Hotel Sheraton, television station, $547,000. Henry R. Kaiser, c/o owner, consult. engr.

Pa., Wilkes-Barre — TELEVISION STATION — Wyoming Valley Broadcastnng Co. (WILK) 88 N. Franklin St., television station. $397,000. John Creutz, Bond Bldg., Wash., D. C., consult. engr.

Texas—PIPE LINE—Phillips Pipe Line Co., Bartlesville, Okla., 45 mi. 12 in. pipe line from Sweeny toward Rancho System, at Sweeny, $285,000; 50 mi. 14 in. crude oil line, looping in Duro and Rankin areas, Rankin, $445,000. CD 7/3/51.

Tex., Amarillo—TELEVISION STATION—Plains Radio Broadcasting Co., 8 and Harrison Sts., plans by Robert E. Hucker, Johnson Bldg., brick, masonry television station. $200,000. CD 10/22.

Tex., Austin—TELEVISION STATION—Capital City Television Co., Enfield Apartments, Enfield Rd., television station, $405,000. Guy C. Hutcheson, Arlington, consult. engr.

Tex., Beaumont — TELEVISION STATION — Beaumont Broadcasting Corp. (KFDM), 1420 Calder Ave., television station, $317,000. A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, consult. engr.

Tex., Beaumont—TELEVISION STATION—The Enterprise Co. (KRIC), 380 Walnut St., television station, $350,000. Gillett & Bergquist, Natl. Press Bldg., Wash., D. C., consult. engrs.

Tex., Beaumont—TELEVISION STATION—KTRM, Inc., Box 152, television station, $367,000. George E. Gutney, Warner Bldg., Wash., D. C., consult. engr.

Tex., Corpus Christi—TELEVISION STATION—Baptist General Convention of Texas (KWBU), Baptist Bldg., Dallas, television station, $368,000. A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, consult. engr.

Tex., Corpus Christi—TELEVISION STATION—Corpus Christi Television Co., Magnolia Bldg., Dallas, television station, $434,000. Guy C. Hutcheson, Arlington, consult. engr.

Tex., Dallas—TELEVISION STATION—UHF Television Co., Magnolia Bldg., Dallas, television station, $424,000. Guy C. Hutcheson, Arlington, consult. engr. CD 1/16.

Tex., Fort Worth — TELEVISION STATION — Lechner Television Co., Fair Bldg., television station, $487,000. Guy C. Hutcheson, Arlington, consult. engr.

Tex., Fort Worth — TELEVISION STATION — Tarrant County Television Co., 1101 W. 7 St., television station, $402,500. Guy C. Hutcheson, Arlington, consult. engr.

Tex., Houston—TELEVISION STATION—Lechner Television Co., Kirby Bldg., Dallas, television station, $542,000. Guy C. Hutcheson, Arlington, consult. engr.

▲ **Tex., Houston**—TELEVISION STATION—South Texas Television Co., 1403 Southmore Blvd., television station, $1,000,000. A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, consult. engr.

Tex., Houston—TELEVISION STATION—Station KPRC-TV (Houston Post Co.), Lamar Hotel, expanding television station, visual and aurol power, at Post Oak Proj., $175,000; 750 ft. television transmission steel tower, Post Oak Rd., $200,000. McIntosh & Inglis, c/o owner, consult. engrs.

Tex., Houston—TELEVISION STATION—UHF Television Co., Magnolia Bldg., Dallas, television station. $430,000. Guy C. Hutcheson, Arlington, consult. engr. CD 1/16.

Tex., Lubbock—TELEVISION STATION—Plains Radio Broadcasting Co. (KFYO) 914 Avenue J, television station. $700,000. A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, consult. engr.

Tex., Lubbock—TELEVISION STATION— Texas Telecasting Inc., Whiteside Bldg., plans by Butler-Brasher Co., 412 Avenue M, 1 and 2 story haydite block television station, 1,000 ft. antenna tower, air-conditioning, 12 in. outside walls, 4 and 8 in. interior partitions. $300,000. CD 10/8.

Tex., San Antonio—TELEVISION STATION—Alamo Television Co., Kirby Bldg., television station, $434,000. Guy C. Hutcheson, Arlington, consult. engr.

Tex., Weslaco—TELEVISION STATION—Taylor Radio & Television Corp. (KRGV) 201 Border St., television station, $401,000. A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, consult. engr.

Va., Richmond—TELEVISION STATION—Larus & Bros. Co., Inc., (WRVA), 22 and Cary Sts., television station, $674,000. Paul Godley Co., Old Quarry Rd., Upper Montclair, N. J., consult. engr.

W. Va., Clarksburg—TELEVISION STATION—Ohio Valley Broadcasting Corp. (WBLK) 211 5 St., Parkersburg, television station, $312,000 Vilah G. Brooks, Parkersburg, consult. engr.

W. Va., Huntington—TELEVISION STATION—Ashland Broadcasting Co., Inc. (WCMI), 625 Fourth Ave., television station. $368,000. A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, Tex., consult. engr.

▲ **W. Va., Wheeling**—TELEVISION STATION—Storer Broadcasting Co., (WWVA), 199 Pierce St., Birmingham, Mich., television station, $1,232,000. A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, Tex., consult. engr.

Wis., Superior—TELEVISION STATION—Ridson Inc. (WDSM), 921 Tower Ave., television station, $406,000, John M. Sherman, 5240 Clinton Ave., Minneapolis, Minn., consult. engr.

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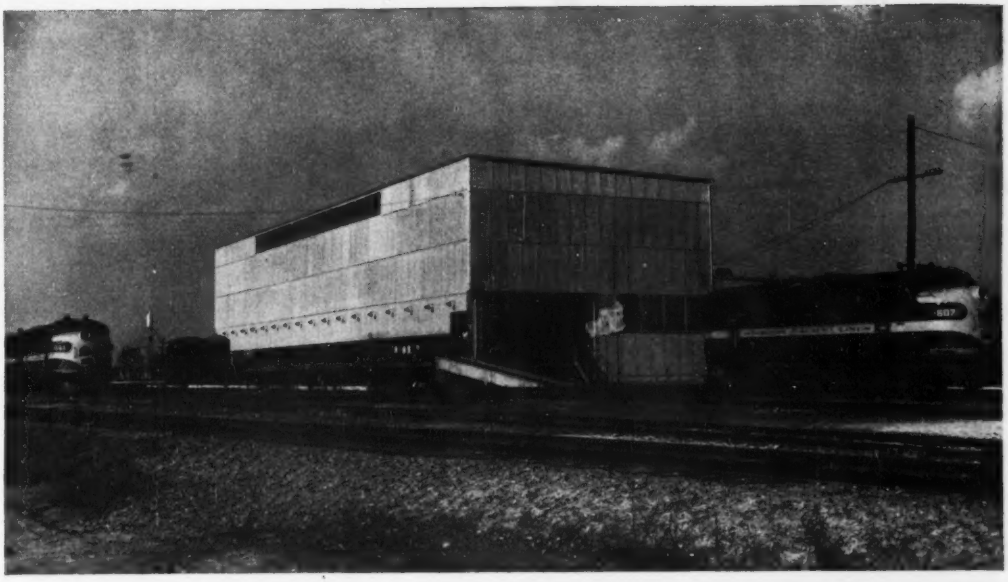

There's no maintenance problem where you use "CENTURY" corrugated asbestos-cement sheets

Diesel Repair Shop, Signal and Control Tower at the Settegast Freight Yard of the Missouri Pacific Lines at Houston, Texas. Buildings sided with long-lasting "Century" Corrugated Asbestos-Cement Sheets. Engineers and Builders: The Austin Company

As you know, among railroading's headaches are its many maintenance jobs. Here a big one was lopped from the list, right at the start—by the use of "Century" Corrugated Asbestos-Cement Sheets . . . because roofs and siding of "Century" Asbestos Corrugated reduce upkeep to a minimum.

Buildings so constructed provide permanent protection for men, equipment, materials and finished products. "Century" Asbestos Corrugated *can not burn, rot or rust;* rodents and termites can't hurt it; it resists many chemical fumes. And regardless of climate, driving winds and deluging rains, it never needs protective painting to preserve it!

This unique material can be applied quickly, easily and inexpensively. The sheets are very strong, yet can be cut and drilled with ordinary working tools, and fastened in place with a minimum of labor.

If you are planning to construct from the ground up, or need merely to "re-cover" an old building, give earnest consideration to the outstanding money-saving qualities of "Century" Corrugated Asbestos-Cement Sheets for both roofing and siding. We'll be glad to send you complete details on request.

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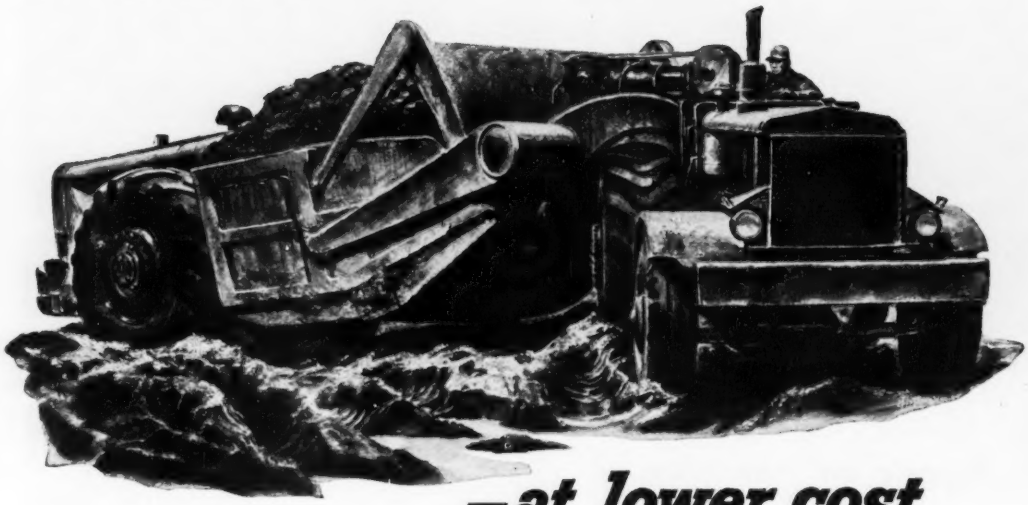

—at lower cost

BIG earth-moving vehicles like this twin-engine self-loading scraper get more work done faster because of Allison TORQMATIC DRIVES. These time-proved hydraulic drives — more than 10,000 have been built for Army tanks and heavy-duty vehicles—make multiple engine applications possible —and practical.

TORQMATIC DRIVE provides a smooth, steady, oil-cushioned flow of power—high-starting torque with uninterrupted acceleration —protection against shock-load damage to engines and equipment. It eliminates engine lugging and stalling while maintaining power to drive wheels at all times. This permits the engine to operate in its most effective speed range by balancing engine power with load requirements.

Users of trucks, scrapers and other vehicles equipped with TORQMATIC DRIVE *report up to 30% more work done and 15% less cost per yard than with a mechanical drive* — additional good reasons why engineers are designing Allison TORQMATIC DRIVES into all types of heavy-duty equipment.

Allison TORQMATIC DRIVES are the only heavy-duty full torque-shifting vehicle transmissions available today—engineered for compactness, permitting flexibility of drive-train design for today's and tomorrow's vehicles.

Like to know more about TORQMATIC DRIVES? Write us for Engineering Data Bulletin which gives full specifications.

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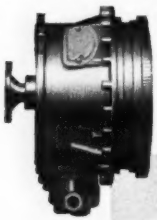
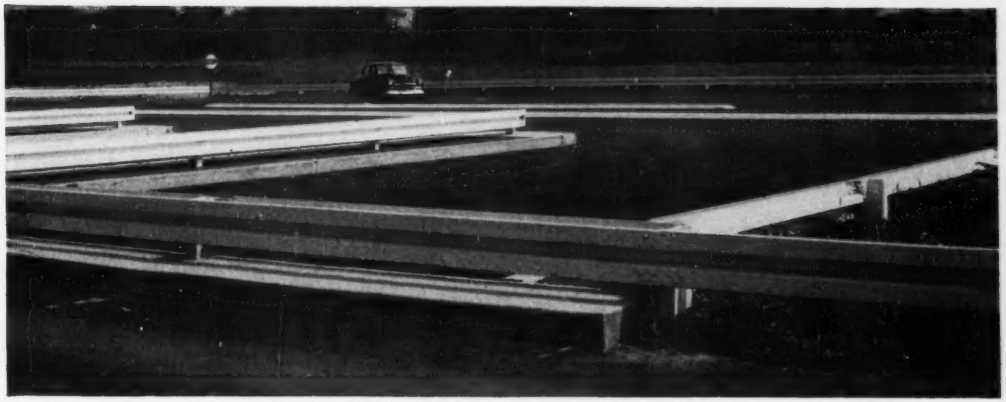
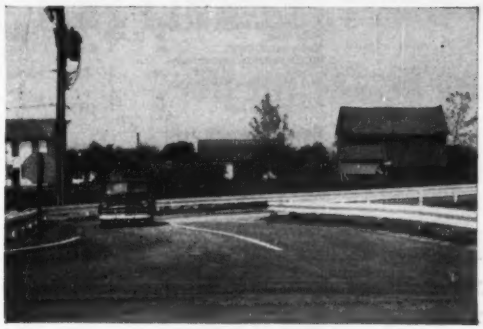


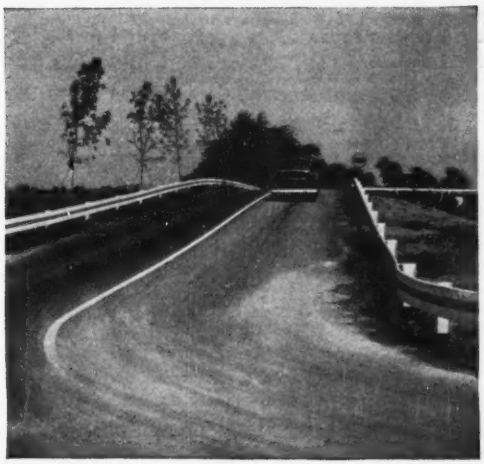
Allison TORQMATIC DRIVES

Compact, efficient hydraulic drive for . . . CRANES TRACTORS TRUCKS SHOVELS LOCOMOTIVES DRILLING RIGS

Test course for new drivers has Safety-Beam protection







WHAT CANDIDATE FACES—New driving course can be completed in 4½ wheel-twisting minutes. With a state trooper at his side, the driver must negotiate an upgrade figure 8 (above) in either second or high gear, make a complete turn in one of the narrow "stalls" (above) without touching the curb or the guard rail, stop and hold the car at an upgrade stop sign (lower left), and make sharp turns (left) unexpectedly banked the wrong way. It's a workout for the troopers, too; up to 400 tests some days.

Bethlehem Safety-Beam Guard Rail—1375 feet of sturdy steel—guides rookie drivers through a new test course at the Pennsylvania State Police barracks near Bethlehem.

The same features that led to the choice of Safety-Beam here have caused highway engineers to specify it for danger spots along many miles of highway. Safety-Beam sections lock together in a continuous beam. Impact is absorbed, not by a single post, but by a number of adjacent posts. One bolt fastens Safety-Beam to any type of post, and unskilled workmen can do the job without special tools.

For complete information about Bethlehem Safety-Beam Guard Rail—and other road steel products listed below—call the nearest Bethlehem sales office, or write to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

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UNIT PRICES

Municipal sewage disposal project, California

Continued from ENR, October 30, p. 68

These prices continue the report on bids for the $1.5-million municipal sewage works in Hayward, Alameda County, California. A description of these works is found in the unit price section of ENR, October 30.

Listed there are the Clawiter interceptor, $471,131; the Tennyson interceptor, $339,558; and the site improvement, reclaimed water pressure system, control house, pumping plant and vacuator sections of the $920,471 sewage treatment plant which is completed here.

Bids also were received, but rejected, for the Tennyson lift station. The low bid was $33,366; the next to low, $35,844; and the high, $43,595.

Bids: 7-7-52 Items	Unit	Quantity	Unit Prices 1	2C
Sludge digester				
Conc sludge diges struct	cy	950	55.00	57.00
Reinf stl	lb	285,000	0.088	0.10
Mixer assemblies	ea	2	10,180	24,670
All pipework, valves fittings & misc	ls	1	5,194	750.00
Stan pedestal waste gas burner	ea	1	484.00	810.00
Grit washer, door type FR & appurten	ea	1	4,351	5,810
Misc iron work	ls			
Painting of struct & facilities	ls	1	2,220	2,300
Sludge gas meter, Emco-cast iron	ea	1	800.00	1,140
Primary clarifier				
Cl A conc, prim clar structure	cy	375	61.00	57.00
Reinf stl	lb	112,500	0.088	0.10
Type 57 Sifeed clarif mechanism	ea	1	14,045	6,210
Pipewrk, valves, fittings	ls	1	1,690	2,664
Sluice gates, Calco or equal	ea	4	374.00	390.00
Met grtngs alum or galv steel	ea	4	79.00	105.00
Weir plates with fastenings	ea	1	56.00	80.00
Painting of struct & facilities	ls	1	1,055	1,100
Return sludge measuring box, etc	ea	1	333.00	580.00
Secondary clarifier				
Cl A conc, 2nd clarif structure	cy	375	62.00	57.00
Reinf steel	lb	112,500	0.088	0.10
Type 57 Sifeed clarif mechanism	ea	1	14,000	16,210
All pipework, valves, etc	ls	1	160.00	2,644
Metal gratings	ea	2	60.00	105.00
Weir plates	ea	2	27.00	40.00
Painting of structures & facilities		1	1,055	1,100
Effluent control structure				
Cl A conc effluent cont str	cy	75	71.00	57.00
Reinf stl	lb	22,500	0.088	0.10
Chronoflo meter assmbly transmitter	ea	1	530.00	615.00
Chlorination container, incl appurt	ea	1	915.00	1,000
Weir plates	ea	3	80.00	100.00
30" Sluice gate Calco model 100	ea	1	120.00	555.00
Chlorination diffuser tube	ls	1	430.00	485.00
Met grtngs alum or galv steel	ea	4	85.00	115.00
Met handrails galv iron	ls	1	750.00	560.00
MH steps & ladder	ls	1	2.00	350.00
All pipework, etc	ls	1	875.00	1,040
Biofilter recirculation pump chamber				
Cl A conc bio rec pump chamber	cy	55	76.00	57.00
Reinf steel	lb	16,500	0.088	0.10
Recirc pump units, 20 hp	ea	2	2,435	2,700
Met base plates for mot	ea	2	130.00	120.00
Sluice gates, Calco	ea	3	500.00	540.00
18" gate valves, Rennsir fig H 114	ea	2	730.00	850.00
Metal grtngs alum or galv steel	ea	2	77.00	140.00
All pipework, fittings etc & appurten	ls	1	680.00	320.00
Painting of structure & facilities	ls	1	175.00	180.00
Met handrings, 1½" galv iron	ls	1	650.00	730.00
Biofilter				
Cl A conc biof struct	cy	500	57.00	57.00
Reinf steel	lb	150,000	0.088	0.10
Mech rotary sewage distributor	ea	1	16,000	19,000
Underdrain grillage irrigation grade	ls	1	9,700	5,000
Filter rock of quality	cy	2,000	5.15	7.10
Access cover, redwood & galv steel	ea	2	26.00	21.00
Stop gates incl gate slots & pink	ea	2	12.00	21.00
Sluice gates, Calco or equal	ea	2	560.00	600.00
Met grtngs alum or galv steel	ea	2	140.00	140.00
MH steps galv stl	ls	1	72.00	100.00
Pipewrk, valves, fittings	ls	1	1,130	1,960
Paint struct & facil	ls	1	630.00	650.00
Aeration system recirculation pump chamber				
Cl A conc, recirc pump chamber	cy	100	66.00	57.00
Reinf steel	lb	30,000	0.088	0.10
Recirc pump-30 hp	ea	2	7,712	8,980
Metal base plates	ea	2	35.00	80.00
Metal grtngs, alum or galv steel	ea	2	100.00	120.00
Sluice gates, Calco	ea	1	540.00	560.00
Met rings, galv iron pipe	ls	1	660.00	680.00
All pipework, etc	ls	1	1,420	350.00
Paint struct & facil	ls	1	175.00	180.00
Primary mixing tank				
Cl A conc for pri mix tank	cy	290	54.00	57.00
Reinf steel	lb	87,000	0.088	0.10
Sluice gates, Calco	ea	1	412.00	410.00
Vortex deflector assemb complete	ea	1	1,055	2,200
Pipewrk, fittings etc. of mix tank	ls	1	1,018	2,560
Paint struct & facil	ls	1	419.00	430.00
Secondary mixing tank				
Cl A conc for tank structure	cy	290	55.00	57.00
Reinf steel	lb	87,000	0.088	0.10
Sluice gate, Calco or equal	ea	2	412.00	410.00
Vortex deflector assem	ea	1	1,055	2,200
Pipewrk, fittings & interconnections	ls	1	1,018	2,560
Paint struct & facil	ls	1	419.00	430.00
Deck aerator				
Cl A conc deck aerator	cy	350	54.00	57.00
Reinf stl comp in place	lb	105,000	0.088	0.10
Sluice gates, Calco or equal	ea	3	153.00	150.00
Flap gates, Calco or equal	ea	2	517.00	580.00
Met rings, 1½" iron pipe galv	ls	1	1,160	1,000
Baffle plates, adj with fastenings	ea	20	66.00	50.00
Hyd jump planks, 3" x 6" rough no. 1 fir 3	ea	140	3.40	4.20
Pipewrk fittings & interconnections	ls	1	6.00	50.00
Paint struct & facil	ls	1	297.00	310.00
Weir plates, comp with fastenings	ea	2	444.00	325.00
Sludge drying beds				
Cl A conc part & dist boxes	cy	70	76.00	78.00
Reinf stl, complete	lb	21,000	0.088	0.10
Underdrain laterals 6" agri tile	lf	250	0.70	0.34
8" agri tile	lf	90	1.70	1.00
Crusher run base rock	t	800	4.00	3.25
Sand, as specified	t	700	8.00	4.30
Plug drain valves, inc 1'4" plt covers	ea	2	68.00	195.00
Stop gates in wall partitions	ea	12	14.00	30.00
Pipewrk, fittings & interconnections	ls	1	250.00	100.00
Trim painting of struct	ls	1	106.00	110.00
Stop gates in distrb box 2' wide	ea	8	5.50	22.00
8", cl 100, Cl sludge pipe	lf	130	6.30	6.30
8" asb bond corr met pipe	lf	60	3.50	2.75
Conc spillway	ls	1	34.00	65.00
Electrical & miscellaneous equipment				
Elec cont lighting circts	ls	1	38,503	35,285
Port steam vaporcleaner model 250-OET	ea	1	1,410	
Rub hose, 100', 4-ply	ea	1	27.00	60.00
Rub hose, 50', 4-ply	ea	1	16.00	30.00

At Hungry Horse Dam gravel preparation plant, this Link-Belt belt conveyor, 850 ft. long, feeds L-B tripper and wing conveyor.

Why LINK-BELT belt conveyors are first choice on so many construction jobs . . .

Engineering experience plus quality components combine to cut handling costs

EFFICIENCY in moving materials makes the difference between profit and loss in many operations. That's why it's so important to make sure you get the *right* belt conveyor system for your needs.

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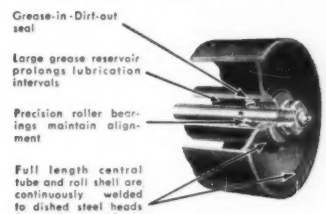
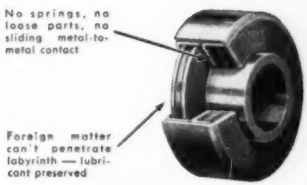
BELT CONVEYOR EQUIPMENT

LINK-BELT Roller Bearing Idlers provide free-rolling, long life

Standard for Industry—L-B "100" Idler


Grease-in-Dirt-out seal
Large grease reservoir prolongs lubrication intervals
Precision roller bearings maintain alignment
Full length central tube and roll shell are continuously welded to dished steel heads for uniform, perfectly balanced strength

Less lubrication and adjustment


No springs, no loose parts, no sliding metal-to-metal contact
Foreign matter can't penetrate labyrinth — lubricant preserved

Grease-in-Dirt-out Seal

Are you acquainted with this type of HYATT bearing?

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The races are made from alloy steel forgings which are heat-treated to obtain the greatest possible strength and durability, then finish-ground to close tolerances. The roller assembly is made up of two bronze end rings drilled to pocket the roller ends and riveted to steel spacing bars.

Built to fulfill specific requirements, this Industrial Inch Bearing, like all the other Hyatt Bearings employing solid or wound rollers, is proving most satisfactory for its particular application.

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Write for Catalog No. 150 for further details in the Inch Series and all the other popular Hyatts for all your bearing needs. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 18 Massachusetts

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **George A. Fuller Co.**, 11 Beacon St., Boston, Mass. CA. $6,335,771, quartermaster's research and development LABORATORY, Lake Cochituate, Eng. 19-016-53-8, NATICK, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 10/28, under LB.

Agostini Constr. Co., 110 Meadow St., Pawtucket, R. I. LB. $464,951. est. $341,140. Elementary SCHOOL, Depot St., SOUTH EASTON, MASS. Town, H. A. Mitchell, chn. School Bldg. Comn., Oliver Ames High School, North Easton, Mass. Bids Oct. 23. CD 10/10.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 21 Pennsylvania

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **New York**—Bureau Contracts & Accounts, the Governor Alfred E. Smith State Office Bldg., Albany,

Merritt-Chapman & Scott Corp., 260 Madison Ave., New York, N. Y., CA $11,772,520, est. $13,208,000. 15 deep water pier foundations for the thruway bridge across the Hudson River between South Nyack and Tarrytown, Cont. H.T. 52-3, Westchester Co. Bids Oct. 16. CD 10/20, under LB.

NEW JERSEY—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

Union Bldg. & Constr. Corp., 631 Main Ave., Passaic, N. J., LB, $609,576 six bridges on Route 46 Water Gap Freeway, F1-195 (2)- Warren Co. Bids Oct. 28. CD 10/9.

Riggs-Distler Co., 1518 Walnut St., Phila., Pa., CA $796,432, water distr. sys. for main Capitol Bldg., HARRISBURG, PA. State Bureau Grounds & Buildings, State Capitol, Harrisburg, Pa. Bids Oct. 16, awarded Nov. 3. CD 10/21, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Dale View Homes**, c/o Teas & Steinbrenner, archt., Homeland Bldg., Malverne, N. Y. Owner Builds. $1,250,000, 96 one-family HOUSES, 23-acre tract, Hicksville-Massapequa Rd., 400 ft. south of Southern State Parkway, MASSAPEQUA, N. Y.

E. H. Keefer & Son, 1321 Rodman St., Phila., Pa., CA $665,884, John Fitch Elementary SCHOOL and site imprvs., BRISTOL, PA. Bristol Twp. Bd. Educ., Rodgers Rd., Bristol, Pa. Howell Lewis Shay, Packard Bldg., Phila., Pa., archt.

Edward Boekenkamp & Sons, 615 S. Sharp Ave., Glenolden, Pa., CA, $450,000, RESIDENTIAL DEVELOPMENT, Mildred and Rhoades Ave., COLLINGDALE, PA. Morecamp Constr. Co., 66 Chester Pike, Sharon Hill, Pa.

Edward M. Gormley, 217 E. Beech St., Hazleton, Pa., CA $425,000, 1 story, 151x442 ft., brick FACTORY, NESQUEHONING, PA. Panther Valley Mfg. Co., 2204 Walnut St., Phila., Pa. Bids Sept. 15. CD 9/17.

▲ **Massey & Co.**, 1426 Walnut St., Phila., Pa., Separate Contracts. $1,000,000. SHOPPING CENTER, PARKING facilities, TROOPER, PA. Edward A. L. Cox, 709 Market St., Camden, N. J., archt.

▲† **Harry Gill Co.**, 2515 Germantown Ave., Phila., Pa. LB $1,089,991. FIRE CONTROL BLDG. east and west wing addns., GUN ROOM ADDN. to Bldg. 84, ABERDEEN PROVING GROUND, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore 3, Md. Jamison & Marcks, 8 E. Mulberry St., Baltimore, Md., engrs.-archts. Bid Oct. 23. CD 10/8.

▲ **Stehle & Beans**, Belle Grove Rd., Annapolis, Md. CA $1,143,380. emergency HOSPITAL, ANNAPOLIS, MD. Anne Arundel General Hospital, Annapolis, Md. CD 10/31, under LB.

▲ **Washington Construction Corp.**, 1625 K St. N.W., Wash., D. C. Owner Builds. Est. $16,875,000. 135 RESIDENCES, Ballantrae Development, SILVER SPRINGS, MD. W. K. Briley & Assoc., 1711 Connecticut Ave., N.W., Wash., D. C., archts.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 19 Louisiana
STREETS AND ROADS
November 19 Louisiana

▲ **N. C., Charlotte**—TERMINAL—B.A. 12/15—City, City Hall, terminal at municipal airport. $1,350,000. Walter W. Hook & Assoc., 303½ W. 4 St., archts. CD 9/27/51.

BIDS ASKED—BUILDINGS

▲ **Fla., Jacksonville**—HOUSING—B.A. 12/1—Jacksonville Housing Auth., Jacksonville, 117 unit housing, Project FLA 1-3, $1,000,000. S. Ralph Fetner, 218 W. Church St., archt.

Tenn., Lebanon—HOUSING—B.A. 12/1—Lebanon Housing Auth., Lebanon, 50-unit housing, Projects Tenn. 17-3 and Tenn. 17-4, $400,000. CD 12/30/40.

Ga., Atlanta—SCHOOLS—B.A. 12/2—Fulton Co. Bd. Educ., Court House, Conley Hills Elementary School, $407,000. Plans deposit $50. A. Thomas Bradbury, 60 5 St. N.E., Atlanta, archt.; East Point Elementary School, East Point, $496,000. Plans deposit $50. Robert & Co. Assocs. 96 Poplar St. N.W., archts. CD 9/22.

▲ **Ga., Atlanta**—SCHOOLS—B.A. 12/5—City Bd. Educ., City Hall, Cascade Elementary School, $365,000, Bid date changed, A. Thomas Bradbury, 60 5 St., archt., CD 10/31; Hunter Hills Elementary School, $350,000, Fuller & Beckett, Glenn Bldg., archts.; Cleveland Avenue Elementary School, $306,000. Toombs & Co., 127 Walton St. N. W., archts.; R. L. Hope Elementary School, $305,000, John W. Cherry, 1429 Peachtree St. N. W., archts. Plans deposit $50 each. CD 8/27.

Ga., Marietta—HOSPITAL—B.A. After 12/15—Marietta Hospital Auth., Marietta, Kennestone Hospital addn. $750,000. Bothwell & Nash, 208 Roswell St., archts. CD 8/21.

▲ **S. C., Greenville**—AUDITORIUM—B.A. 12/16—City, City Hall, 214 S. Main St., Memorial Auditorium, $1,000,000. Plans deposit $50. Cunningham & Walker, 129 River St., archts. CD 1/25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Norfolk Dredging Co.**, Campostella Wharf, Norfolk, Va., CA. $3,139,875, dredging, demolition and drainage facilities, Naval Amphibious Base, NOY 71289, Spec. 32858, LITTLE CREEK, VA. P. Wks Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Bids Oct. 28. CD 11/3, under LB.

▲† **Virginia Eng. Co., Inc.**, 29 St. and James River, Newport News, Va. $1,273,000. Operations bldg., garage and supply bldg., Naval Auxiliary Air Station, NOY 74836, Spec. 35773, OCEANA, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Bids Oct. 21. CD 10/24, under LB.

▲† **Bero Eng. & Constr. Co.**, P. O. Box 477, Hampton, Va., CA. $2,650,000. Roads, walks and utilities, Naval Auxiliary Air Station, NOY 74837, Spec. 35774. OCEANA, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Bids Oct. 21. CD 10/24, under LB.

▲† **T. A. Loving & Co.**, 706 Bank of Wayne Bldg., Goldsboro, N. C. CA. $1,198,000, Item 1, clearing and grubbing, pavements, outside utilities and railroad Peterfield Point, NOY 71502, CAMP LEJEUNE, N. C. P. Wks Office, Sixth Naval Dist. Box 365, Naval Base, Charleston, S. C. Bids Oct. 2. CD 11/5, under LB.

▲† **J. L. Coe Constr. Co.**, Box 1881, Charlotte, N. C. CA $1,556,511. Exten. Overhaul and repair Bldg. 137, NOY 74183, Spec. 34148. CHERRY POINT, N. C. P. Wks. Office, Box 365, Naval Base, Charleston, S. C. Bids Oct. 2. CD 10/8, under LB.

Farmers Telephone Co-operative, Kingstree, S. C. Owner Builds. $700,000. 632 mi. telephone lines, at Kingstree, SOUTH CAROLINA.

▲ **GEORGIA**—Coastal Highway Commission of Georgia, c/o State Hy. Dpt., Atlanta,

Merritt-Chapman & Scott Corp., 17 Battery Pl., New York, N. Y. CA, total est. $15,000,000. Eugene Talmadge Memorial bridge over Savannah River on Georgia to South Carolina short route, Chatham Co.

† **McKoy-Helgerson Constr Co.**, 320 N. Hudson St., Greenville, S. C., CA, $473,415, receiving and shipping warehouse, Naval Air Station, NOY 71583, JACKSONVILLE, FLA. Dpt. Navy, Officer in Charge of Construction, Box 365, Naval Base, S. C. CD 12/3/51.

Butler & Cobbs, Bell Bldg., Montgomery, Ala., CA $771,000, completion of livestock coliseum, MONTGOMERY, ALA. Alabama Agricultural Center Bd., State Capitol, Montgomery, Ala. Bids Oct. 23. CD 10/28.

▲† **Ivey Bros. Constr. Co.**, 3224 Peachtree Rd., Atlanta, Ga. LB $1,220,000. academic bldg., Keesler Air Force Base, BILOXI, MISS. U. S. Eng., 2301 Grant St., Mobile 7, Ala. Bids Oct. 30. CD 2/7/52.

Keller Constr. Corp., 7900 Palm St., New Orleans, La. CA $722,452. St. Bernard Underpass, Florida Ave., NEW ORLEANS, LA. City, City Hall, New Orleans, La., CD 10/31, under LB.

▲† **James F. O'Neil Co.**, 1501 S. Randon St., New Orleans, La. LB $2,175,000. Dehumidification and electrical sys. at Michoud Ordnance Plant, Inv. 53-34, NEW ORLEANS, LA. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Oct. 31. CD 9/17.

BUILDINGS

LOW BIDS AND CONTRACTS

G. L. Wilson Bldg. Co., Statesville, N. C. CA $600,500, HOSPITAL, STATESVILLE, N. C. Iredell Co., Statesville, N. C. Bids Oct. 31. CD 10/10.

George L. Fuller Constr. Co., Fuller Bldg., Augusta, Ga., LB $558,000. HIGH SCHOOL, NORTH AUGUSTA, S. C. Aiken Co. School Dist., Aiken, S. C. Bids Oct. 29. CD 10/6.

G. Phillip Morgan, Jr., Blun Bldg., Savannah, Ga., Owner Builds. $400,000. 75 RESIDENCES, SAVANNAH, GA.

S. & W. Builders, Box 624, Valdosta, Ga., Owner Builds. $450,000. 55 RESIDENCES, VALDOSTA, GA.

J. B. Regen Const. Co., 127 Fifth Ave. N., Nashville, Tenn., CA. $474,750. Head Negro SCHOOL, NASHVILLE, TENN. City Bd. Educ., City Hall, Nashville, Tenn. Bids Oct. 8.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 18 Wisconsin December 16 Indiana & Illinois
STREETS AND ROADS
November 18 Wisconsin

† **Ind., New Albany**—B.A. 12/9—U. S. Eng., 830 W. Broadway, Louisville, 1, Ky., 3 pumping plants and structures complete with sub-stations, West End New Albany Local Protection Project, $500,000.

▲ **Indiana and Illinois**—B.A. 12/16—Indian State Toll Bridge Comn. c/o J. B. Minor, Citizens Bank Bldg., Evansville, 17, Ind. substructure and superstructure Wabash River Memorial Bridge over Wabash River from Indiana to Illinois $6,000,000. Contractors must be prequalified with Indiana State Highway Comn., Indianapolis. Sverdrup & Parcel, Syndicate Trust Bldg., St. Louis, 1, Mo., engrs., adv. ENR 11/13. CD 3/9/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Schirmer Schneider Co., 2719 Detroit Ave., Cleveland, O., CA. $494,000, general constr. west concourse (first part) of passenger terminal, 550 lt. steel frame structures, at Cleveland Hopkins Municipal Airport, CLEVELAND, O. City, City Hall, Cleveland, 14, O. Bids Oct. 30. CD 10/8.

▲† **F & Y Building Service, Inc.**, 319 E. Town St., Columbus, O., CA. $1,765,432, two maintenance hangers, incl. plumbing, heating, sprinklers and electrical work, at Lockbourne Air Force Base, Serial No. ENG 46-022-53-12, COLUMBUS, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Oct. 17. CD 10/30, under LB.

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis, Zone 4,

Gast Constr. Co., Warsaw, Ind., LB, $338,286, est. $441,371, grading, drainage 0.173 mi. shoulder wid'n., 3.44 mi. conc. base wid'n., b. conc. resurf. b. conc. with c. conc. base 1.16 mi. c. conc. 0.146 mi. State Rd. 19, Hamilton Co.; LB $97,152, est. $125,841, grading, draining, b. conc. with conc. base 0.323 mi. State Rd. 67, Madison Co.;

McMahan Constr. Co., Rochester, Ind., LB, $630,983, b. conc. wid'n. resurf. 3.233 mi. and c. conc. 1.799 mi. U. S. 31 and S. of Kokomo to north of State Rd. 26 Howard Co.;

Bontrager Constr. Co., 618 W. Indiana Ave., Elkhart, Ind., LB, $602,771, est. $730,478, c. conc. 6.673 mi. State Rd. 135, Harrison Co.;

Breslin Constr. Co., 1801 S. Brook St., Louisville, Ky., LB, $170,782, est. $198,636 c. conc. base wid'n. b. conc. resurf. 5.795 mi. State Rds. 45 and 5 north of Jasper, Dubois Co., Bids Oct. 30.
rejected bids Oct. 30, bit. coated aggregate 0.265 mi., bit. coated aggregate resurf. 8.617 mi. Fowler, Benton Co. CD 10/8.

BUILDINGS

LOW BIDS AND CONTRACTS

Leonard H. Krill Co., 2169 E. 33 St., Cleveland, O., CA. Approx. $500,000. 3rd floor over present bldg. and other remodeling and expansion at HOSPITAL, CLEVELAND, O. Bd. Trustees, Evangelical Deaconess Hospital, 4233 Pearl Rd., Cleveland, O. Fulton, Krinsky & De laMotte, 6014 Euclid Ave., Cleveland, O., engrs. archts. Awarded Oct. 31.

▲ **Webb Robinson & Assoc.**, 374 N. Virginia Lee Rd., Columbus, O. Owner Builds. $1,750,000. 198-family APARTMENTS on 7-acre tract bounded by Clifton, Brunson, Woodland and Norfolk & Western R. R. to be known as Clifton Parks Apartments, COLUMBUS, O. CD 10/30.

B. W. Handler Constr. Co., 223 Jackson Blvd., Chicago, 6, Ill., CA, $703,476, TB HOSPITAL Rehabilitation, CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. Bids Oct. 1, awarded Oct. 30. CD 10/15, under LB.

▲ **American Community Builders**, 105 W. Monroe St., Chicago, 3, Ill., CA, $1,500,000, 2 story, 60,000 sq. ft. steel, brick concrete stone DEPARTMENT STORE, PARK FOREST, ILL. Goldblatt Bros., 333 S. State St., Chicago, 4, Ill. Loebel, Schlossman & Bennett 430 N. Michigan Ave., Chicago, 11. Ill., archts. CD 9/4.

Standard Constr. Co., Inc., 607 Hamm Bldg., St. Paul, Minn., LB. $599,900, general contract two elementary SCHOOLS, KENOSHA, WIS. Bd. Educ., 5515 Sheridan Rd., Kenosha, Wis. Bids Oct. 28. CD 10/10.

W. W. Oeflein, Inc., 5345 N. Hopkins St., Milwaukee, 9, Wis., LB. $691,900, general contract Campus Laboratory SCHOOL, MILWAUKEE, WIS. Bd. Regents of State College, Madison, Wis. Bids Oct. 22. CD 9/12.

▲ **O. Burke Co.**, 1032 Fisher Bldg., Detroit, Mich. LB $1,915,000. 5 story, 170x300 ft., brick, steel, concrete Tuberculosis HOSPITAL addn., Hamilton St., DETROIT, MICH. Herman Kiefer Hospital, Taylor and Hamilton Sts., Detroit, Mich. Bids Oct. 21. CD 9/23.

▲ **Darin & Armstrong**, 2041 Fenkel St., Detroit, Mich. CA Est. $5,000,000. brick, concrete, 250,000 sq. ft. SHOPPING CENTER incl. parking, Plymouth and Farmington Rds. LIVONIA, MICH. Sheiden Land Co., Warren Sheiden, pres., 32121 Plymouth Rd., Plymouth, Mich. Bids Oct. 6. CD 9/30.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 20 Kansas
STREETS AND ROADS
November 20, 21 Kansas

BIDS ASKED—BUILDINGS

▲ **Ia., Fort Madison**—HOSPITAL WING——B.A. 11/25——Sacred Heart Hospital, Fort Madison, hospital wing, $1,430,450. Morgan-Gelatt & Assocs., 217 F & M Bank Bldg., Burlington, archts. CD 10/15.

▲ **Minn., Winona**—HOUSING—B.A. 11/25—Winona Housing & Redevelopment Auth., F. W. Cunningham, chn., 160 dwelling units fronting on right-of-way for Hy. 61, south of Red Top Cabins, $1,811,600. Plans deposit $50, Boyum, Schubert & Sorensen, Winona, archts. CD 4/9/52.

▲ **Tex., Corpus Christi**—AUDITORIUM—B.A. 11/28—City, City Hall, municipal auditorium, $1,450,000. Plans deposit $50. Richard S. Colley, 310 S. Tancahua St., archt. Hare & Hare, 114 W. 10 St., Kansas City, Mo., landscape archts. CD 1/11/50.

▲ **Tex., Baytown**—PLANTS—Bids Asked—Humble Oil & Refining Co., Baytown, paraxylene plant unit, $750,000; propylene plant, $5,200,000. CD 10/23.

SOON LETS CONTRACT—BUILDINGS

▲ **Tex., San Antonio**—STORE—Sears Roebuck & Co., C. W. Miller, local mgr., Romana Plaza, soon lets contract 1, 1 and 2 story, cast stone, ledge stone, roman and face brick exterior general department store, concrete pier and beam fdn., $1,742,400; Contr. 2, plumbing and gas lines, $108,000; Contr. 3, central heating plant and ventilating, $90,000; Contr. 4, automatic sprinkler sys. incl. outside lines, $85,000; Contr. 5, all electrical work-outside, $60,000; Contr. 6, refrigeration unit, service station of fuel dispensing, etc. $90,000. B. Cocke, 3501 Broadway, San Antonio, George L. Dahl, 2101 N. St. Paul St., Dallas, John Stokes Redden, Sears Roebuck Co., Property Dept. 824, 3609 Arthington Blvd., Chicago 7, Ill., archts. W. E. Simpson, 945 Milam bldg., engr. CD 5/28.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Tobin Barcus Constr. Co.**, 1 and Everett Sts., Kansas City, Mo. LB $965,325, restoration of toe and bank protection Central Industrial Dist. Missouri Sect. Kansas City Flood Control Proj., near Kansas City, Inv. 23-028-53-79, MISSOURI. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Oct. 28. CD 10/13.

Robert Paulus Constr. Co., 3441 Morganford Rd., St. Louis 16, Mo. LB $806,824, general contract, 125x270 ft. hangar for maintenance, etc. of 4-engine plane, offices, etc., Lambert-St. Louis Municipal Airport, Robertson, ST. LOUIS, MO. City, c/o Frank J. McDevitt, pres., Bd. P. Service, 304 City Hall, St. Louis 3, Mo. Trans-World Airlines, Inc., Municipal Airport, Kansas City, Mo., lessee. Bids Oct. 28. CD 9/29.

▲† **Olson Constr. Co.**, 410 7 St., Lincoln, Neb. LB $1,588,338. POL facilities and hydrant aircraft refueling, Lincoln Air Force Base, Inv. 25-066-53-33, LINCOLN, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Oct. 31. CD 10/7.

▲† **T. C. Bateson Constr. Co.**, 618 Irwin-Keasler Bldg., Dallas, Tex., LB $2,586,875, est. $1,875,000. 185,-237 sq. ft. maintenance hangar, containing shops, etc., LB $37,115, water lines, facilities; LB $67,220, sewers; LB $68,000, road constr. and paving, at Carswell Air Force Base, Serial No. Eng 41-443-53-13, FORT WORTH, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Oct. 29. CD 10/3.

† **COLORADO**—Bureau P. Rds., Dpt. Commerce, Bldg. 40, Denver Federal Center, Denver.

Lowdermilk Brothers, Box 4150, Englewood, Colo., LB, $546,971, est. $496,326, 1.75 mi. Forest Hy. Proj. 29-P, Boulder-Idaho Springs, Boulder Co. Bids Oct. 28. CD 10/20.

BUILDINGS

LOW BIDS AND CONTRACTS

W. Murphy & Sons, New York Bldg., St. Paul, Minn. CA $550,000, general contract 4 story, 90x100 ft. FACTORY and WAREHOUSE, 808 Forest St., ST. PAUL, Minn. Minnesota Mining & Manufacturing Co., 900 Fauquier Ave., St. Paul, Minn.

Spencer Constr. Co., Spencer, Ia. LB $447,440. SCHOOL addns., WELLS, MINN. Bd. Educ., L. Myli, clk., Wells, Minn. Pass & Rockey, Mankato, Minn., archts. Bids Oct. 28.

Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex., CA. Approx. $475,000, 25,000 sq. ft. PLANT unit, BAYTOWN, TEX. Humble Oil & Refining Co., Humble Bldg., Houston, Tex. Milton McGinty, 2424 Ralph St., Houston, Tex., archt.

▲ **The M. W. Kellogg Co.**, Mellie Esperson Bldg., Houston, Tex., CA. Approx. $6,500,000, solvent deasphalting PLANT, BAYTOWN, TEX. Humble Oil & Refining Co., Baytown, Tex. CD 7/29.

▲ **Quisle Constr. Co.**, 417 Texas & Pacific Bldg., Fort Worth, Tex., CA. $1,169,192, 3 story bsmnt., SOMICO (OFFICE) Bldg., CORPUS CHRISTI, TEX. Southern Minerals Corp., c/o Southern Minerals Corp. Bldg., Corpus Christi, Tex. CD 11/5 under LB, Industrial Buildings.

Sanders Constr. Co., Sherman, Tex., LB $554,641, est. $550,000. 70 DWELLING units, ALAMOGORDO, N. M. Alamogordo Housing Auth., Alamogordo, N. M. Bids Oct. 28. CD 10/20.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Calif., Muroc**—SEWER, etc.—B.A. 11/25—U. S. Eng., 751 S. Figueroa St., Los Angeles, sewer, water, gas systems at Edwards Air Force Base, ENG 04-353-53-49 $1,500,000. CD 4/5/51.

BIDS ASKED—BUILDINGS

Calif., Calexico—SCHOOL—B.A. 12/2—Calexico Union Union High School Dist., Calexico, high school. $752,-096. Plans deposit $35. Bowen, Rule & Bowen, 2835 Gilroy St., Los Angeles, engrs. CD 7/31.

▲ **Calif., Los Angeles**—POLICE FACILITIES—B.A. 12/10—City, City Hall, 8 story, rein.-con. police facilities bldg., $5,000,000. Plans deposit $150. Murray Erick & Assocs. and Paul Jeffers, 5657 Wilshire Blvd., Los Angeles, engrs. Welton Becket & Assocs., and J. E. Staunton, 5657 Wilshire Blvd., Los Angeles, archt. CD 12/48.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲**City**, City Hall, Murray, Utah rejected bids Oct. 15, sewage treatment plant, LB $611,101; sewer extens., LB $1,060,808, MURRAY, UTAH. Will re-advertise. CD 10/23, under LB.

▲† **Morrison-Knudsen Co., Inc.**, 411 W. 5 St., Los Angeles, Calif., LB, $1,318,474, est. $1,135,074, earthwork, concrete lining, structures, Wellton Canal, Station 618 plus 25.75 to 1059 plus 25.23; lateral M-14.8, Station 0 plus 68.46 to 17 plus 66.00; and Unit 1, Wellton Distribution System, Gila Proj., Spec. DC 3808, ARIZONA. Bureau Reclamation, Dpt. Inte-

▲† **A. Teichert & Son, Inc.**, 1931 Stockton Blvd., Sacramento, Calif., LB, $1,895,780 Pacoima Wash Improvement Tujunga Wash, etc., Los Angeles, Civeng 04-353-53-14, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Oct. 31. CD 10/7.

† **R. A. Wattson**, 5528 Vineland Ave., North Hollywood, Calif., LB, $522,815, earthwork, pipe lines, etc. at Glen Anne Laterals Cachuma Proj., Spec. DC3801, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Goleta, Calif. Bids Oct. 28.

† **H. Earl Parker, Inc.**, 12 and F Sts., Marysville, Calif., LB, $818,771, Cobbles, levee, bank protection road surf. etc. along left bank of Sacramento River near Freeport, Spec. 1704, CALIFORNIA. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Oct. 28. CD 10/8.

† **J. F. Cummins**, 245 E. Olive St., Burbank, Calif., CA, $708,561, est. $750,000 rehabilitation 32 buildings and B.O.Q., Eng 04-353-53-26, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Oct. 17. CD 10/30, under LB.

▲ **Stolte Inc. and Fred J. Early Jr. Co., Inc.**, 8451 San Leandro St., Oakland, Calif., LB, $3,597,500 Schedules B and C, 54 m.g.d. sewage treatment plant, SACRAMENTO, CALIF. City, City Hall, Sacramento, Calif. Bids Oct. 30. CD 9/22.

† **Stolte, Inc.**, 8451 San Leandro St., Oakland, Calif., LB, $991,351, B.O.Q. at Spec. 1672 TRAVIS AIR FORCE BASE, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Oct. 28. CD 10/8.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **F. & S. Constr. Co.**, 19 Ave. and Bethany Home Rd., Phoenix, Ariz. Own Forces. $20,000,000. 2,100 HOUSE development, PHOENIX, ARIZ.

▲ **J. C. Boespflug Constr. Co.**, 1912 4 Ave. S., Seattle, Wash., LB, $1,960,391, Harborview County HOSPITAL addn., SEATTLE, WASH. King Co., County-City Bldg., Seattle, 4, Wash. Bids Nov. 3. CD 10/20.

▲ **Donald M. Drake Co.**, Lewis Bldg., Portland, Ore., CA. $3,062,000. South Salem HIGH SCHOOL, SALEM, ORE. School Dist. 24CJ, Salem, Ore., Bids Oct. 16. CD 10/1.

A. F. Stewart, 1130 Keith Ave., Berkeley, Calif., CA. $611,000, new Market St. SCHOOL, DALY CITY, CALIF. Jefferson School Dist., 344 Santa Barbara Ave., Daly City, Calif. Bids Sept. 19, awarded Oct. 31. CD 10/2, under LB.

▲ **R. G. Trigg**, 5325 Atlantic Ave., Long Beach, Calif., CA. $1,071,840, 154 frame, stucco HOMES, 182 and 184 Sts., Avalon Blvd., Mettler, Towne, Crocker, Ambler and Bonham Aves., DOMINGUEZ, CALIF. Thorsen Homes, Inc., 5325 Atlantic Ave., Long Beach, Calif.

Swinerton & Walberg, 225 Bush St., San Francisco, Calif., CA. $546,025, HOSPITAL addn., Project No. 2, MARTINEZ, CALIF. Contra Costa Co., Hall of Records, Martinez, Calif. Awarded Oct. 30. CD 10/30, under LB.

▲ **Southwestern Engineering Co.**, 4800 Santa Fe Ave., Los Angeles, Calif., CA. $15,000,000, OIL REFINERY near PINOLE, CALIF. Tidewater Terminals, Inc., 3523 Kempton Ave., Oakland, Calif. Awarded Oct. 31.

R. Pederson & Sons, 446 Clark St., Fresno, Calif., LB. $568,795, new SCHOOL buildings, PIXLEY, CALIF. Pixley Union Elementary School Dist., Box 303, Pixley, Calif. Bids Oct. 28. CD 10/17.

F. E. Young, 2141 Main St., San Diego, Calif., LB, $792,000 1 story, concrete 47,000 sq. ft. JUVENILE HALL, Linda Vista, SAN DIEGO, CALIF. San Diego Co., Civil Center, San Diego, Calif. Bids Oct. 28. CD 10/1.

Choitner & Gumbiner, 3123 W. 8 St., Los Angeles, Calif., LB, $530,424, est. $500,000, 3 story HOSPITAL WING addn., alterations, SANTA MONICA, CALIF. California Lutheran Hospital Society, 1250 16 St., Santa Monica, Calif. Bids Oct. 28. CD 10/10.

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CANADA

BIDS ASKED—BUILDINGS

▲ **Ont., St. Catherines**—FACTORY—Bids Asked—McKinnon Industries Ltd., Ontario St., 1 story, 480x720 ft., concrete, steel, brick factory addn., crane bay at one end depressed railway siding and truck ramps at one side, Grantham Twp. $3,000,000. Thomas R. Wiley, 32 William St., archt. CD 10/6/50.

BUILDINGS

LOW BIDS AND CONTRACTS

J. L. E. Price & Co. Ltd., 680 W. Sherbrook St., Montreal, Que., CA. $500,000, 3 story, bsmnt., irregular dimensions rein.-con. SCHOOL, ST. JOHN'S, NEWFOUNDLAND. Roman Catholic Episcopal Corp., St. John's, Newfoundland. J. E. Hoskins, P. O. Box W. 1331, St. John's, Newfoundland, archt.

Hallman Constr. Ltd., 157 Kent St., Kitchener, Ont., CA. $675,000, 70 HOUSING units in Green Acre Subdivision, GUELPH, ONT. Central Mortgage & Housing Corp., 251 King St. W., Kitchener, Ont. Bids Oct. 6. CD 9/29.

Monarch Constr. & Realty Ltd., Scarborough, Ont., Owner Builds, $750,000, APARTMENT BLOCKS, Englehart Place, SCARBOROUGH, ONT.

▲ **The Concrete Constr. Co.**, 1082 Decarie St., Montreal, Que., CA. $7,851,350, completing superstructure. National Printing Bureau, Sacred Heart Ave., HULL, QUE. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Oct. 22. CD 9/30.

Midway Constr. Co. Ltd., Pointe Claire, Que., Separate contracts, $900,000 100 low-rental type DWELLINGS, POINTE CLAIRE, QUE.

Alberta Steel Products Co., 1505 2 Ave. S., Lethbridge, Alta., CA. $700,000, 20 standard Ordnance AMMUNITION MAGAZINES, DUNDURN, SASK. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. K. F. Hurst, c/o owner, engr. Bids Oct. 16. CD 10/3.

U. S. POSSESSIONS

BIDS ASKED—BUILDINGS

Canal Zone, Corozal Townsite and Balboa—QUARTERS—B.A. 12/9—Engineering and Construction Director, Panama Canal Co., Balboa Heights, 22 masonry type quarters, bldgs and appurtenances at Balboa and 128 masonry and off-the-ground type bldgs. at Corozal Townsite. Plans deposit $40.

(Proposal Advertisements see p. 150 to 152)

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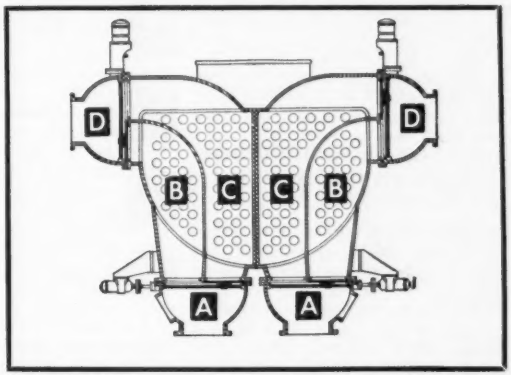
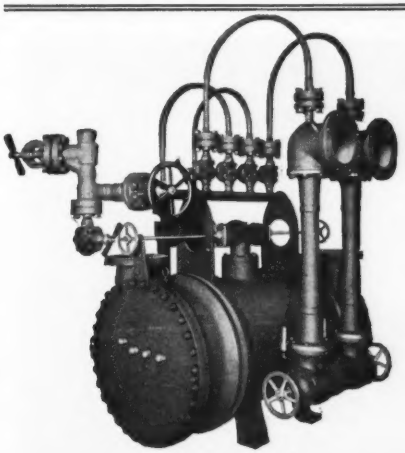


CROSS-SECTION DUAL BANK CONDENSER SHOWING HOW "REVERSE FLOW" WORKS

Both halves work the same but independently of each other.

Right Side: Water enters divided water box at valve chamber D, with lower port open. It flows through pass B to end of condenser, back through pass C and out through left port of A.

Left Side: Flow is reversed: Valves at inlet D and discharge A are changed to permit water to flow through C and back through B in the opposite direction, then out through lower port of A.



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Construction machinery supply good

Supply and demand for all types of heavy construction machinery will be in better balance next year, and repair parts should be generally available in the quantities needed.

That was the outlook as seen last week by J. W. Mohler, director of the Construction Machinery Division of the National Production Authority.

Mohler will soon return to Caterpillar Tractor Co. after completing his tour of duty as head of the Construction Machinery Division.

Here is his outlook:

Output of heavy construction machinery this year will be slightly larger than in 1951, despite the steel strike and other work stoppages.

Some 500 companies will produce more than $3 billion worth of construction equipment in 1952.

• **Defense needs slacken**—A reduction in military combat requirements for heavy construction machinery can be expected by June of next year. On that basis, by the end of the second quarter of 1953, production and demand will be in better balance than at any time since 1950.

There has been a marked increase in manufacturing capacity in the last two years. Manufacturers said that many customers have stopped ordering in anticipation of need—they now withhold their orders until shortly before the machinery is actually required for the job.

There are only a few gaps left in the parts supply situation. Few, if any, machines are on the dead line today because parts cannot be obtained.

Among the items still reported short from time to time are replacement blades for bulldozers, scrapers and trucks. Some repair parts for tractor-types remain scarce.

But, in 1953, the overall demand for repair parts is expected to be considerably less than in either 1952 or 1951.

• **Supply and demand balance**—There are still some machinery shortages. The three larger sizes of track-type tractors remain scarce. But new manufacturing facilities coming into production early in 1953 are expected to bring supply and demand into balance. Declining demand for parts and for military requirements will help also.

Mohler said that larger cranes, shovels and draglines above three cubic yard size continue in short supply despite NPA measures to increase production.

Asphalt pavers and tandem rollers also remain tight, principally because of heavy requirements for construction of off-shore bases, airfields and roads. It probably will be late in the third quarter of 1953 before production can overtake the demand for these machines.

Military combat requirements are taking 25% of the present production of construction machinery, Mohler said. Normally, the military services take only .5%.

Mining and quarrying take 18% of all construction machinery manufactured today. Industrial and military construction—including Atomic Energy Commission plants—take 12% of the total output.

Next largest consumers of new construction machinery today are highway building, airport construction and agriculture. Each takes 10% of the total production.

Looking ahead, Mohler said the oil industry will need large quantities of construction machinery next year to drill 55,000 more wells and lay 44,600 miles of oil and gas pipelines.

Demands for construction machinery will also be heavy to carry out newly announced expansion programs for tungsten, antimony, titanium, beryl and barite, as well as for the big electric expansion program, Mohler said.

Construction down slightly in October

Construction put in place went down slightly from $3.1 billion to $3 billion in October, according to the Bureau of Labor Statistics and the Building Materials Division of the Department of Commerce.

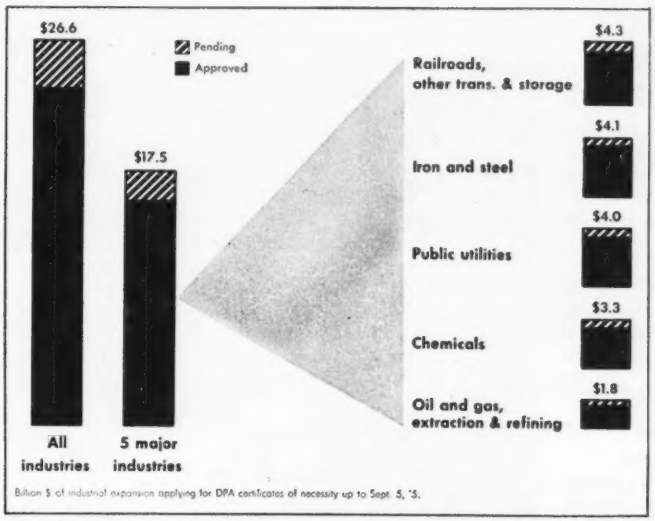
The government agencies said that both private and public construction expenditures declined less than seasonally this October to totals of $1,982 million and $1,025 million respectively.

Residential construction remained steady near the $1-billion mark, while school, church, commercial and industrial building showed a slight increase.

For the first 10 months this year, new construction expenditures totaled $27,025 million, 4% above the amount for the comparable 1951 period. When adjusted for price changes, however, construction activity was about the same level for both years, according to figures disclosed by the government.

FAST WORK—Dravo Corp., of Pittsburgh, completed the $250,000 Muskingum River Dam No. 10 in Zanesville, Ohio, in 58 days. The construction schedule called for 100 days. The new 500-ft dam replaces a century-old wood structure, shown at left above. The old dam was partially washed out in the April floods. The sheet steel dam is composed of 15 cells filled with concrete.

Government's fast tax amortization nears end as goals are approached



Defense industrial expansion under the government's fast amortization program is nearing its end.

There is still a large amount of construction awaiting approval, but as various industrial programs approach the expansion goals, the Defense Production Administration is becoming more elective in granting tax benefits.

As of Sept. 5, Certificates of Necessity for accelerated amortization had been granted to 13,602 expansion projects with an estimated cost of $23.3 billion. This means that 74% of the total dollar volume of projected defense expansion had already been approved.

The backlog of applications not yet approved on Sept. 5 stood at $3.2 billion, 59% under the backlog of $7.8 billion in April of this year.

How much of this $3.2-billion backlog will be turned into contract awards depends on DPA policies—which are now clouded by the impending change in national administration.

Most of the new industrial building waiting to be approved has been proposed by a handful of industries.

Chemicals and public utilities are among the leaders in dollar volume of this future defense expansion. The chemical industry has asked for tax benefits for another $481 million in plant. The utilities have $439 million worth of plant and equipment waiting for DPA approval.

Together these industries accounted for 35% of all Certificates of Necessity granted in the June-September period this year.

Iron and steel expansion has slowed down as the DPA goals have come into sight. But, the iron and steel expansion is not dead. As of Sept. 5, DPA had requests on hand for $327 million more for this industry.

Oil and gas extraction and refining products have applications pending for $212 million in new projects. This type of expansion has been moving along at a fast clip this year.

• **Pipeline projects decline**—Oil pipelines, which have been an important part of the heavy construction picture in the defense program, have requested another $192 million in expansion. But Certificates of Necessity for these pipelines slowed down in the June-September period and represented less than 2% of the total dollar volume of approved expansion in that period.

Aluminum and other non-ferrous metals have a backlog of $237 million in new plant, waiting for a go-ahead from the Defense Production Administration. But these certificates have been approved at a slow rate in recent months.

Railroads, other transportation, and storage have the largest single expansion program in terms of fast tax write-offs, but construction is a comparatively minor part of that program. Most of the tax benefits have been sought for rolling stock for the railroads and for ships and other non-construction items.

Laminated timber association formed

Manufacturers of laminated timber arches, structural members and trusses —organized as the American Institute of Timber Construction—are ready to set up Washington, D. C., headquarters in their first bid for national recognition.

President Ward Mayer reported last week that headquarters administration will be under the direction of Frank J. Hanrahan, veteran of 15 years with the National Lumber Manufacturers Association. Hanrahan expects to be on his new job as executive director of AITC before the end of this month.

Mayer, who is general manager and sales manager for Timber Structures, Inc., of Portland, Ore., said that AITC will attempt to do for the laminated timber industry what the American Institute of Steel Construction has done for the older industry.

"We will set up quality standards so the buyer can pick the product that meets the specifications required for his work," Mayer said.

"Our standards committee has completed its work partially and is ready to move ahead in issuing approved specifications for commercial and government requirements," Mayer added.

Aside from the general objectives of establishing approved standards, the institute expects to develop research projects.

No membership campaign has started, but tentative plans call for three classifications: (1) manufacturers of the timber items; (2) professional members among engineers, architects and contractors and (3) associate members from related industries.

FABREEKA

Mountings for 900-ton TWIN VIADUCTS on the C&O Ry.

PROTECT BOTH CONCRETE and STRUCTURE

The Viaduct over West Fork is 176′ high and 850′ long. Viaduct over Arnold Fork is about the same height and 701′ long. Towers, consisting of four supports 50′ apart, are spaced at 100′ intervals beneath the span.

Fabreeka Pads, 41″ x 41″ x ½″, are installed beneath the 4 inch steel pedestal bases to separate and equalize the bearing surfaces of concrete and steel, and to seal out weather. The abutments are equipped in the same way, but with smaller FABREEKA Pads measuring 19″ x 39″ x ½″.

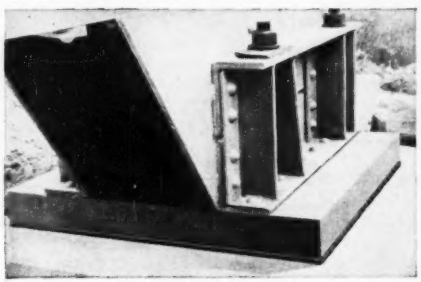
FABREEKA Mountings are used on this 850′ viaduct on the Chesapeake & Ohio Railway over the West Fork in Kite, Ky.

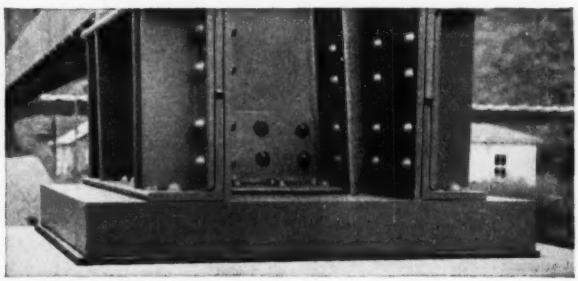
FABREEKA Mountings are also used on this 701′ Arnold Fork viaduct on the Chesapeake & Ohio Railway, likewise in Kite, Ky.

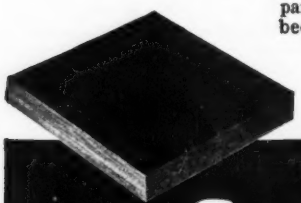
FABREEKA Pads Insure Even Distribution of Load

FABREEKA Pads beneath the steel columns adjust themselves to the bearing surfaces of the concrete foundations, insure even distribution of the load, and eliminate grouting.

FABREEKA Bridge Pads absorb impact shock and vibration and prevent flaking and cracking of the concrete foundations.







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WRITE FOR ENGINEERING DATA

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It Pays To Specify FABREEKA

Youngstown Sheet & Tube expansion means more steel for the Midwest

Steel consumers in the Middle West watched with interest as the Youngstown Sheet & Tube Co. lit its fifth new open hearth furnace in East Chicago, Ind., in October. The occasion marked the halfway point in the company's $160-million expansion program at its Indiana Harbor works. When completed about two years hence, the expansion will boost productive capacity of the plant to 2,500,000 tons per year from its present rate of 1,400,000 tons.

The expansion program was started in July, 1950, with plans to build a new four-furnace open hearth unit. When the Korean crisis developed the company announced plans for a second unit of four open hearth furnaces, a new blast furnace, new coke ovens and byproduct equipment, a blooming mill with soaking pits, high-pressure boiler house, stripper building, and a new cold roll finishing mill. All are now under construction.

• **Why Chicago?**—When asked why the Chicago area was chosen for the expansion program, Board Chairman Frank Purnell said it was chiefly a question of the potential market.

"We chose the Chicago area rather than the East," said he, "because it offers a better growing market for steel. Other factors included sufficient acreage, organization and facilities—all of which are available at the Indiana Harbor plant."

• **Looking ahead**—"In the overall picture," said Mr. Purnell, "we don't see any drop in steel demand through the first half of 1953. Many customers are still buying conversion steel for first quarter 1953 delivery because steel allocations from Washington are not satisfying their demands."

Each of the eight new open hearth furnaces has a capacity of 250 tons per heat. Five are now in operation and the remaining three will start turning out ingots by the first of the year. Added to the 9 furnaces in the original plant, this will make a total of 17. Two Bessemer converters, which have been supplementing open hearth production, will be retired from service, said Mr. Purnell.

• **More pig iron next year**—The new by-products coke plant, with its battery of 75 ovens, started operating last week. The huge blast furnace now under construction will have a daily capacity of 1,600 tons of pig iron. It is scheduled for completion by the first of the year, and will supplement two existing blast furnaces.

Also under construction are an intake structure at the edge of Lake Michigan and 3,400 ft of 17-ft dia tunnel to furnish additional water for plant operations. The tunnel is located in solid rock, 200 ft below ground surface. Another major item in the program is a 675-ft extension to the existing ore yard and dock.

• **Construction materials needed**—Some idea of the construction involved in the expansion program can be gained from the amount of materials required. They include:

Rolled steel products	140,000 tons
Building steel	60,000 tons
Steel piling	36,000 tons
Reinforcing bars	10,500 tons
Steel for blast furnace	8,000 tons
Steel in cranes, ore bridges and unloaders	8,000 tons
Rails (32 miles of track)	6,000 tons
Steel pipe	5,500 tons
Steel sheets (roofing and siding)	4,000 tons
Steel for the coke plant	3,600 tons
Steel conduit	1,700 tons
Total steel	283,300 tons
Refractory material	66,000 tons
Concrete	200,000 cu yd
Cement	310,000 bbl
Slag and gravel	154,000 tons
Sand	114,000 tons

• **Top supervision**—Engineers in charge of the expansion include Edward Haak, superintendent of construction, assisted by J. C. Anton. George Abel is general superintendent of the steel plant, and H. J. Darlington is superintendent of the open hearths. B. M. Stubblefield is manager of the Chicago district, and W. V. McDonnell is superintendent of production at the Indiana Harbor works.

Largest ocean terminal nears finish

By midsummer of next year, if present schedules hold up, Los Angeles Harbor will have a new $7-million cargo-passenger marine terminal claimed to be the "largest in the world."

For preferential assignment to Matson Navigation Co., the new terminal was begun in the fall of 1949. Originally scheduled to be in operation by early 1951, construction difficulties and material shortages have forced successive postponements in completion date. But Harbor Department officials, recovering from their latest blow—the steel strike—are hopeful that this time they'll make it.

The terminal will be the second completed in the harbor under a $14-million postwar expansion program. First was a $6-million terminal turned over to American President Lines in the fall of 1950. The postwar program is the latest phase of growth that, since the harbor became part of Los Angeles in 1909, has made it fourth-ranking port in the country for total tonnage and value of cargo handled (department estimate). It now represents an investment of some $121 million. Of this, $30 million has come from the federal government, $29 million has been raised by bond issues (only $7 million remains to be repaid), and the rest has come from earnings.

All terminal facilities built in Los Angeles Harbor since 1914 have been on a "preferential assignment" basis. Taking the present terminal as an example, the arrangement works like this: The Harbor Department is building the terminal and will retain ownership. The terminal will be assigned to Matson on an exclusive lease, with this proviso: When dock space is not in use by Matson, other ships can be berthed there.

The Matson facility will consist of a 1650-ft wharf, a clear-span transit shed 200 x 1208 ft, 20 acres of paved open storage area, and a railroad storage yard served by three continental railways and two local lines. A second shed, 200 x 500 ft, is planned for construction in another year or two.

The transit shed, now about 74% finished, will have steel frame and steel roof trusses, with walls and floors of reinforced concrete. A firewall will divide the shed into two parts, one of 704 ft for strictly cargo movements, one of 504 ft for both passenger and cargo. The latter portion will have a mezzanine and a second floor for passenger facilities and offices. Passenger movements will be facilitated by electric stairways and ramps, one of which will go from the second floor over the vehicle and railway loading dock to the automobile parking area.

The wharf—1650 x 75 ft wide—is supported by asphaltic-impregnated concrete and creosoted Douglas fir piles. The portion of the deck under the transit shed is reinforced concrete beam and slab. The deck portion outside the shed is timber throughout.

For the first time on a major project, the Harbor Department is functioning as its own general contractor, the solitary bid received on the whole facility having been rejected as too high. Largest single contract let, amounting to $2,238,640, was awarded on a joint bid to Davies, Keusder and Brown, E. S. McKittrick Co., and Macco Corp., to construct the transit shed and install plumbing. Construction has been under the overall control of E. C. Earle, chief engineer for the department, whose office also did the design work.

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FOR PILE DRIVING
The "Kwik-Steam" Generator is a compact, lightweight, economical unit that will get up steam pressure quickly and can easily be transported around the job, plus a unit that is automatically controlled and yet gives a full capacity of steam instantly.
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Novel airport financing proposed

The Toledo, Ohio, city council is studying a novel method of financing a proposed $3.4-million express airport. If the plan succeeds, it could easily be adopted in other cities now looking for ways to finance this type of construction.

Under the proposed plan, which was set forth by aviation consultant Leigh Fisher, commercial airlines, local industry and other airport users would pay more than two-thirds of the construction cost of the airport and no federal aid would be involved.

Revenue financing of the new airport by the Fisher method would require: (1) Development of the airport according to the specific needs of the airlines and other users; (2) formation of a non-profit management corporation which would lease the airport from the city and pay to the city the revenue bond debt service requirements; (3) operation, maintenance, management and control of the airport by the management corporation; and (4) membership on the board of directors of the management corporation by airport users.

The airlines would get two substantial benefits from this plan. One is a matter of public relations; the other could show up in construction tailored to meet the needs of a specific company.

By avoiding federal aid, the airlines would be able to meet one of their public relations problems—the charge by the railroads that airline facilities are subsidized while rail facilities are not.

The second point, equally important, is that with airline representatives on the board of directors, construction or operational changes could be made more easily.

Trans World Airlines and United Airlines, for example, do not always serve the same city with the same types of aircraft. One may need large hangars, another may not. One may want repair facilities, the other may not.

Under a city-managed, city-owned airport system, the flexibility needed to meet these varying conditions is often lacking. Facilities are sometimes set up on a "take it or leave it" basis. In the Fisher plan for the Toledo field, there could be more flexibility in design, in construction and in operation.

• **Who pays?**—The costs of the project under the Toledo financing plan are assignable to the various participants. The city, if it undertakes the project, would make a $973,750 investment in acquiring the land, clearing, grading and draining it.

The city would not consider this investment lost because it would not be subject to depreciation or depletion from use by aircraft.

All investment required for depreciating assets (such as runways, taxiways, buildings, utilities, etc.) would be paid for by the users, since such facilities would have to be replaced eventually.

• **Ready money**—Voters authorized a $1.7-million mortgage revenue bond issue for airports in November 1951.

Retirement of these bonds and interest payments would be secured by commitments for annual facility use payments by commercial airlines, industrial aircraft owners and potential airport building and concession users.

The city would be expected to acquire from other sources the $895,000 necessary for land acquisition and preparation prior to the development.

A proposed site of 1,100 acres near Nonclova is tentatively approved.

Six Toledo industries have purchased some 900 acres of the needed land and offered it to the city at cost.

The breakdown of estimated costs for the Toledo airport is:

Approaches, $128,000; land acquisition, clearing, grading, etc., $895,000; paving runways, taxiways, aprons, $1.3 million; paving roads, parking lots and sidewalks, $89,400; utilities, $167,000; service building, $32,000; terminal building, $315,000; other facilities, including fences, seeding, etc., $53,050; administrative, engineering, architectural expenses, $376,550.

Leigh Fisher, of South Bend, Ind., and Stepleton, McDonnell & Barber, of Toledo, are consultants for the city.

ENR analyzes 1951 architects' activity

A study just completed by ENGINEERING NEWS-RECORD shows that 2,803 architects in 1951 signed up 7,130 new heavy construction projects which had an estimated cost of $7.1 billion.

Most of this new business came from 6,621 new buildings estimated to cost $6.4 billion. Of these, commercial and public buildings and mass housing made up 84% of the projects and 88% of the dollar value with 5,541 jobs costing about $5.7 billion.

Industrial projects accounted for the remainder of the buildings with 1,080 projects valued at $777 million.

Airports and unclassified construction were the other major sources of new business in 1951. The architects were commissioned for 213 airport jobs estimated to cost $542 million, and 218 unclassified projects to cost $87 million.

Sewerage, waterworks and other types of heavy construction were only minor items in the architects' 1951 new business.

There were 1,281 architects listed who signed up new work aggregating $1 million or more last year. They had

Architect new business in 1951
as reported by *Engineering News-Record* and *Construction Daily*

Based on architects with $100,000 or more new business in 1951

Type of work	Total number architects	Total number projects	Total construction volume (millions)
Building	....	6,621	$6,428.4
Industrial buildings	599	1,080	776.5
Mass housing, commercial, and publ. buildings	2,386	5,541	5,651.9
Heavy, other than building	....	509	676.5
Waterworks	38	15	5.9
Sewerage	49	25	6.3
Bridges	5	2	13.0
Streets and roads	52	17	3.2
Earthwork, irr., drain	23	19	19.1
Airports	146	213	541.7
Unclassified	113	218	87.4
All types of construction	2,803	7,130	$7,104.9

5,096 new projects valued at $6.4 billion.

In addition, the list showed 547 architects with new jobs totaling $500,000 to $1 million. They signed up 954 new projects with a total value of $374 million.

Also listed are 975 architects with $100,000 to $500,000 in new business in 1951. They accounted for 1,080 projects with a total estimated cost of $287 million.

• **California leads**—More architects (281) had jobs in California than in any other state. Texas was second with 270 and Pennsylvania was third with 246 architects.

Other states were: Illinois, 195; New York, 170; Massachusetts, 149; and Michigan, 120.

This study was the first of its kind made by ENGINEERING NEWS-RECORD. The list includes only those architects with new projects during the year which were estimated to cost $100,000 or more.

Consulting engineers handle big volume in '51

The first study of sources of business for consulting engineers' new business (ENR Oct. 30, p. 71) reported on 1,302 consultants handling new projects valued at $5.2 billion. The study also showed that 591 out of the total topped the $1-million mark in volume of new business signed up in 1951.

These consulting engineer firms or individuals took on 2,988 heavy construction jobs which they estimated would cost $4.9 billion.

Building construction, costing $2.6 billion, was their biggest source of new business. They signed up 347 new industrial plants worth $1.4 billion.

In addition, they had 579 mass housing, commercial and public buildings jobs estimated to cost $1.2 billion.

Other important sources of new business included 322 airport projects valued at $675 million; 272 unclassified construction jobs worth $494 million; and 626 sewerage jobs valued at $398 million.

The rest of the dollar volume came from: waterworks, $270 million; earthwork and waterways, $242 million; bridges, $230 million; and streets and roads, $90 million.

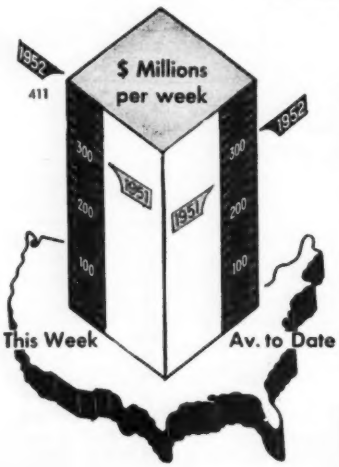
ENR also lists 223 consultants who undertook new construction projects estimated to cost from $500,000 to $1 million in 1951.

They signed up 568 projects valued at $146 million.

The third group consists of 488 consulting engineers who had a total of $100,000 to $500,000 in new business. They signed up 776 new projects of all types in 1951, representing a total cost of $118 million.

Activity This Week

As reported to ENR (in millions of dollars)



Contracts by type of work

	This Week	Cumulative 46 wks 1952	1951	% chge
Waterworks	$6.6	$201.7	$183.0	+10
Sewerage	3.8	262.0	303.1	−14
Bridges	31.3	382.4	287.0	+33
Highways	13.1	1,308.4	1,064.1	+23
Earthwork, waterways	12.7	438.9	458.6	−4
Buildings:				
Public	59.3	4,123.0	1,923.3	+114
Housg., pub.	4.9	558.9	591.9	−6
Housg., priv.	80.8	2,670.9	1,784.1	+50
Commercial	67.6	644.0	556.0	+16
Industrial	89.9	2,508.9	3,783.1	−36
Unclassified	41.5	1,210.2	1,499.5	−19
Total	**$411.5**	**$14,309.3**	**$12,433.7**	**+15**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	Nov.	588.61	282.94	123.39
	Oct.	588.43	282.86	123.27
Bldg. cost	Nov.	426.04	230.30	121.10
	Oct.	424.77	229.62	120.70
Volume	Oct.	540	219	156

OFFICIAL PROPOSALS

Bids: December 16, 1952

ADVANCE NOTICE TO BIDDERS

Wabash Memorial Bridge

OVER
THE WABASH RIVER
NEAR MT. VERNON, INDIANA

It is the intention of the Indiana State Toll Bridge Commission to receive proposals for the Wabash Memorial Bridge, on the 16th day of December, 1952.

On Contract I—"Bridge Substructure and Superstructure," the Indiana State Toll Bridge Commission cannot consider any bid unless the bidder is prequalified in accordance with the current regulations of the Indiana State Highway Commission, governing the Classification and Rating of Prospective Bidders, as required by Chapter 98, Acts of the General Assembly of State of Indiana, 1937. This advance notice is being circularized and published to provide ample time for prospective bidders, who are not already qualified, to make application for qualification to the Indiana State Highway Commission, Indianapolis, Indiana, by submitting Contractor's Statement of Experience and Financial Condition on the forms used by the State Highway Commission. The information required on these forms must be submitted in sufficient time before the intended letting date to permit the computation of a rating and the preparation of the certificate before bids are received. Forms may be obtained from the office of the Indiana State Highway Commission, Indianapolis, Indiana, or Sverdrup & Parcel, Consulting Engineers, St. Louis 1, Missouri.

Where the applicant for qualification is a foreign corporation the application shall be accompanied by a certificate of the Secretary of State, of Indiana, that such corporation is authorized to do business in the State of Indiana.

Prequalification of prospective bidders will not be required on Contract II—"Toll House and Office Building."

The proposed bridge will serve highway traffic only and is to have a concrete roadway of 26'-0" clear width with 2'-6" safety curbs. The main spans will be through trusses of the three-span continuous tied-arch type, spanning openings of 283½ feet, 441 feet and 283½ feet. The approach spans will consist of four units of three-span continuous girders, each span being 115' center to center of bearings and each unit totaling 345' in length. All substructure units will be reinforced concrete with the approach piers supported on steel bearing piles and the main piers founded on rock, approximately 29' below mean low water elevation.

In addition to the bridge construction, a toll house and office building will be constructed adjacent to the Indiana Highway approach road.

Preliminary estimates indicate that construction will require approximately 2,300 tons of structural carbon steel, 420 tons of structural low-alloy steel, 9,500 cubic yards of concrete, 490 tons of reinforcing steel and 12,400 lineal feet of steel piling.

It is anticipated that the formal "Advertisement for Bids" will be published on or about the 24th day of November, 1952, and the bidding plans and specifications will be available at that time.

INDIANA STATE TOLL BRIDGE COMMISSION
Walter G. Koch, Chairman
October 27, 1952

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3835) will be received at Denver, Colorado, until December 9, 1952, for furnishing two (2) 19.67-ft. by 28.03-ft. fixed wheel gate frames for the Palisades Project, Idaho. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

OFFICIAL PROPOSALS

Bids: November 20, 1952

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law and CANAL LAW, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 20th day of November, 1952, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, District Engineer, 333 Broadway, Albany, New York				
Albany	C. T. 52-8P R. C. 52-111 S. T. 52-29	N. Y. State Thruway-Catskill Section-Sub. 5 (Greene Co. line-Normanskill Creek); Selkirk Interchange; Stylebarrck Rd.; Beaver Dam Rd.; Clapper Rd.; Weisheit Rd.; Wemple Rd.; Coeymans-Indian Fields Pt. 1 S. H. 1468; River S. H. 193; Glenmont-Feura Bush, S. H. 367; Albany-Bethlehem S. H. 5499	11.56 Thy. 5.31 Acc.	9" Cem. Conc. Pavt. Pavt. 2 @ 25' Var. Wide = 14.94 Mi. Asp. Conc. Ty. 1A, Opt. = 0.88 Mi. Bit. Mac. Ty. 1 = 0.46 Mi. Cal. Chl. Treat. Grav. = 0.59 Mi. Gr. Sep. 3 Sp. Alpha I-Beam, 146' 3 Sp. Plate Girder Br. 425' Gr. Sep. 18' Sp. Closed Box Conc. Culvert Gr. Sep (R.R.) 3 Sp. Alpha I-Beam 192.5' Gr. Sep. 4 Sp. Alpha I-Beam 286' Gr. Sep. Alpha I-Beam 45' Gr. Sep. 4 Sp. Alpha I-Beam 241.7' Gr. Sep. 4 Sp. Alpha I-Beam 202' Gr. Sep. 4 Sp. Alpha I-Beam 216.7' Gr. Sep. 4 Sp. Alpha I-Beam 230' Gr. Sep. 3 Sp. Alpha I-Beam 198.4'	$470,000 Plans $100	$8,585,000
		DISTRICT No. 2				
		LACY KETCHUM, District Engineer, 109 No. Genesee St., Utica, New York				
Montgomery	FARC 52-112	Amsterdam-Hagaman, S. H. 298 Manny Corners-Blue Corners S. H. 1408 Proj. No. S-382(1)	4.53	Asp. Conc. Ty. 1A, Opt.	$16,000 Plans $15	288,000
Herkimer	M 52-2	City of Little Falls: Erie Canal Lock 17		Resurfacing with W. I. Plates the Chamber Walls of Lock 17	$23,000 Plans $10	419,200
		DISTRICT No. 4				
		J. P. LARSEN, District Engineer, Barge Canal Terminal, Rochester, New York				
Monroe	FAC 52-15	Rochester City: Brooks Ave. Proj. No. U-1103(1)	0.21	Asp. Conc. Ty. 2A	$4,500 Plans $10	83,000
		DISTRICT No. 5				
		C. R. WATERS, District Engineer, 65 Court St., Buffalo, New York				
Erie	O. T. 52-17 S. T. 52-30	N. Y. State Thwy.-Ontario Section Sub. 13 (Union Rd.-Transit Rd.); Cayuga Rd.; Youngs Rd. and 2 Martinal Rds.	2.14 Thy. 0.94 Acc.	2 Course Cem. Conc. Pavt. 2 @ 25' Wide = 2.10 Mi. Asp. Conc. Ty. 1A, Opt. = 0.52 Mi. Bit. Mac. Ty. 1 = 0.35 Mi. Misc. Work = 0.11 Mi. Gr. Sep. 3 Sp. Alpha I Beam 127' Gr. Sep. (P.R.) Alpha I Beam 95.4' Gr. Sep. 3 Sp. Alpha I Beam 130' Gr. Sep. 4 Sp. Alpha I Beam 191' 2 Sp. Alpha I Beam Br. 116.9'	$193,000 Plans $50	3,510,000
		DISTRICT No. 8				
		J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, New York				
Westchester	TSP 52-3	Taconic State Parkway.....	0.16	Traffic Control Signals....	$500 Plans $10	9,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. DC-3831) will be received at Huron, South Dakota until November 25, 1952 for furnishing labor and materials for: Construction of Missouri River Crossing for Oahe-Midland 115-kilovolt transmission line, Transmission Division—South Dakota, Missouri-Oahe District, Missouri River Basin Project. Location: Near Pierre, South Dakota. Principal items are: Erecting steel towers—290,000 lbs.; concrete—520 cu. yds.; furnishing and stringing 3 A.C.S.R. conductors—1.12 miles; furnishing and driving treated timber piles—9,760 lin. ft.; and other work. Completion time 340 days. For particulars, address Bureau of Reclamation, Huron, South Dakota; or Building 53, Denver Federal Center, Denver, Colorado.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3832) will be received at Huron, South Dakota until December 4, 1952, for furnishing labor and materials for: Ft. Randall Switchyard approaches. Location: Vicinity Ft. Randall Switchyards. Principal items are: 7,510 cu. yds. excavation for structures; 370 cu. yds. concrete; 375,400 lbs. erecting steel towers; 7,000 lin. ft. installing various sizes 1500-volt electrical power cable; 3.65 miles of line stringing conductors and overhead ground wires; and other work. Completion time 280 days. For particulars, address Bureau of Reclamation, Huron, South Dakota; or Building 53, Denver Federal Center, Denver, Colorado.

OFFICIAL PROPOSALS

NOTICE TO CONTRACTORS

Sealed bids will be received by the Chief of the Public Works Division, Office of Territories, Department of the Interior, Room 2713, Interior Building, Washington 25, D. C. until 2:00 P.M., Eastern Standard Time, January 12, 1953 for the construction of the following:

Group I—St. Thomas, Virgin Islands—
Project 53-105
Section A—Charlotte Amalie High School (1)
Section B—Alterations and additions to:
James Madison Elementary School (5)
Robert Herrick Elementary School (6)
James Monroe Elementary School (7)
Group II—St. Croix, Virgin Islands—
Project 53-504
Section A—Christiansted Consolidated School (1)
Section B—Alterations and Additions to LaValee Elementary School (4)

At the time and place indicated above the bids will be publicly opened and read aloud. Bids received after the hour set for the bid opening will be returned unopened.

Plans and Specifications and other proposed contract documents are open for public inspection at the office of the District Engineer, Virgin Islands District Branch, Public Works Division, Thomas G. Mooney, Charlotte Amalie, St. Thomas, U. S. Virgin Islands; M. A. Dyer Company, 24 School Street, Boston 8, Massachusetts; Lester M. Marx, Chief, Public Works Division, Room 2713, Interior Building, Washington, D. C.; A. G. C. Office, 1113 Congress Building, Miami, Florida; Builders Exchange, 46 Northeast 6th Street, Miami, Florida; U. S. Department of Commerce, #2, Puerto Rican Reconstruction Administration Grounds, Building N, San Juan, Puerto Rico; F. W. Dodge Corp., 119 West 40th Street, New York 18, N. Y.

A set of such documents may be procured from the office of M. A. Dyer Company (Architects and Engineers) at 24 School Street, Boston, Mass., upon deposit of $75.00 by certified check payable to the Treasurer of the United States, all of which will be refunded to bona fide bidders upon the receipt of the plans and specifications in good condition within thirty (30) calendary days from the date of bid opening. A bona fide bidder includes any person who submits a bid for a general contract but does not include a person who submits a quotation to the general contract bidders.

To persons who procure plans and specifications upon payment of the above stated amount, and who do not submit a bid, $60.00 will be refunded upon the receipt thereof in good condition within thirty (30) calendar days from the date of the bid opening. No refund will be made for return after that time.

Each bid must be accompanied by a satisfactory bid security (certified check or bid bond) in an amount of not less than 5 per cent of the total bid.

The successful bidder wil be required to furnish a performance bond and payment bond, each in the amount of 100 per cent of the contract price.

No bid may be withdrawn until thirty (30) calendar days after the scheduled closing time for the receipt of bids.

The Government reserves the right to reject any and all bids and to waive informalities with respect thereto.

The Government also reserves the right to award a contract for any or all sections on the basis of the basic bid for each section or any combination of sections or by the adoption of any or all of the alternates, whichever course is in the best interests of the United States.

Lester M. Marx
Chief, Public Works Division
Office of Territories

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. DC-3836) will be received at Yuma, Arizona until December 10, 1952, for furnishing labor and materials for: Earthwork, concrete lateral lining and structures, Unit 3, Mohawk Distribution System, Wellton-Mohawk Division, Gila Project, Arizona. Location: 18 miles east of Wellton, Arizona. Principal items are: Excavation 1,216,000 cu. yds.; concrete in lining and structures 14,400 cu. yds.; slide gates 62,700 lbs.; and other work. Completion time 500 days. For particulars, address Bureau of Reclamation, Yuma, Arizona; or Building 53, Denver Federal Center, Denver, Colorado.

OFFICIAL PROPOSALS

Bids: December 11, 1952

The Altoona City Authority
Altoona, Pennsylvania

Sealed bids for the construction of the Westerly Sewage Treatment Works in the City of Altoona, Blair County, Pennsylvania, will be received by the Altoona City Authority, in the City Hall, at Altoona, Blair County, Pennsylvania, until 10 A.M., E.S.T., Dec. 11, 1952, and then publicly opened and read aloud.

The work will be divided into five contracts designated as follows:

CONTRACT NO. 10—STRUCTURAL WORK
CONTRACT NO. 11—MECHANICAL WORK
CONTRACT NO. 12—ELECTRICAL WORK
CONTRACT NO. 13——HEATING WORK
CONTRACT NO. 14—PLUMBING WORK

The work may be awarded to one contractor under Contracts Nos. 10 and 11 in combination.

Information for Bidders, Form of Bid, Specifications and Form of Contract may be examined at the Office of the City Engineer ,in the City Hall, Altoona, Pennsylvania, or at the office of Albright & Friel Inc., Consulting Engineers, 121 South Broad Street, Philadelphia 7, Pennsylvania, and copies thereof may be obtained at either office upon a deposit of $50.00 for each set of documents for each contract. If the documents are returned in good condition within five days after the opening of bids, the full amount of the deposit for one set will be returned to each actual bidder and other deposits will be refunded with a deduction of $25.00 to defray the actual cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A certified check or bid bond drawn to the order of the Altoona City Authority equal to five percent of the amount of bid must be submitted with the proposal.

The proposal must be sealed and marked "SEALED PROPOSAL FOR CONSTRUCTION OF THE WESTERLY SEWAGE TREATMENT WORKS" addressed to "MR. J. H. DILLEN, SECRETARY OF ALTOONA CITY AUTHORITY, ALTOONA, PENNSYLVANIA", and the contract or contracts under which the proposal is being submitted must also be shown thereon.

The Altoona City Authority reserves the right to reject any or all bids or waive any informality, and to award each contract to cover the construction of the additions to the Westerly Sewage Treatment Plant, as may be deemed by the Altoona City Authority to be to their best interests.

No bidder may withdraw his bid within forty-five (45) days after the actual date of the opening thereof.

The National Production Authority has assigned a DO-T-8 rating and a T-8 Allotment to this project.

Date: October 20, 1952

J. H. DILLEN, SECRETARY,
ALTOONA CITY AUTHORITY

CITY OF PHILADELPHIA, PROCUREMENT DEPARTMENT. Sealed proposals will be received in Room 305, City Hall Annex until 1:30 P.M., Eastern Standard Time, Tuesday 2, 1952, for Department of Public Property, Bureau of Engineering and Architecture CONTRACT NO. 260—SUBWAY CONSTRUCTION IN MARKET STREET FROM WEST OF 21ST STREET TO EAST OF 24TH STREET, and at that time will be publicly opened and read in Room 313, City Hall Annex. Specifications, Plans and Pre-qualification Questionnaire may be obtained from the Bureau of Engineering and Architecture, Room 1314, City Hall Annex, upon making a deposit of $50.00 in cash or by check made payable to the City Treasurer of the City of Philadelphia, which will be refunded upon return of the documents in good condition within 10 days after the Contract is awarded. The form of contract and the bonds may be obtained from the Law Department, Room 715, City Hall Annex. NOTICE: No bids will be received unless the Qualification of Bidders Questionnaire Form furnished by the Department is filed with the Chief of the Bureau of Engineering and Architecture, Department of Public Property with all questions fully answered at least one week previous to the date set for the opening of the bids. The Commissioner reserves the right to reject any or all bids. CHARLES H. FRAZIER, Procurement Commissioner.

OFFICIAL PROPOSALS

Bids: December 2, 1952

George Washington Bridge

THE PORT OF NEW YORK AUTHORITY
CONNECTION WITH PALISADES INTERSTATE PARKWAY STAGE II
CONTRACT GWB-140.003

Sealed proposals for construction of the connection between the New Jersey approach to the George Washington Bridge and Palisades Interstate Parkway will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 2:30 P.M., Tuesday, December 2, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials, Room 1110, and copies will be furnished upon deposit of $25 per set. Deposit to be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt should then be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, Nov. 13, 1952

Bids: December 9, 1952

Buildings No. 152, 153 and 154 and Extension of Wharf on South Side of City Channel

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-170.010

Sealed proposals for the construction of a warehouse development on the southeast end of the City Channel at Port Newark, including the construction of Buildings No. 152, 153 and 154, the extension of the wharf, paving, and the installation of railroad trackage and utilities will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 2:30 P.M., Tuesday, December 9, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials, Room 1110, and copies will be furnished upon deposit of $100 per set. Deposit to be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt should then be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, Nov. 13, 1952

Bids: December 3, 1952

Sewerage System and Pumping Station

NOTICE TO BIDDERS
TOWNSHIP OF DENVILLE
MORRIS COUNTY, NEW JERSEY

Sealed proposals for the construction of a sewerage system and pumping station for the Township of Denville, New Jersey, will be received by the Township Committee at 8 P.M. in Municipal Office, Fire House, Main Street on December 3rd, 1952. At that time and place the sealed bids will be opened and read for consideration by the Township Committee.

All bids shall be presented to the Committee by the parties bidding or their agents, at the place and time designated, when called for by the Chairman of the Board. No bids will be received previous to the time designated and none will be received thereafter.

The work to be done under this contract includes furnishing and laying approximately 17,000 lineal feet of 8 inch Cement-asbestos (transite) sewer pipe and appurtenances, and constructing a sewage pumping station with all pumping equipment and appurtenances.

A copy of the plans and specifications will be on file in the office of the Township Clerk, in the Municipal Building of Denville, New Jersey.

Plans and specifications may be obtained at the office of Lee T. Purcell, Consulting Engineer, 36 De Grasse Street, Paterson 1, New Jersey, upon receipt of a certified check made payable to the Engineer, in the amount of Twenty-five Dollars ($25.00), for one set of plans and specifications. Said deposit shall be refunded only under the conditions that they be returned in good condition within thirty days after the opening of bids, and provided that a bona fide bid has been made.

Each proposal must be accompanied by a Surety's Consent, and a certified check for not less than 10% of the amount of the bid, payable to the Township of Denville, New Jersey.

The form of bid supplied must be used in bidding.

The successful bidder will be required to furnish within ten days after the award, a Surety Corporation Bond equal to 100% of the contract price.

The Township of Denville reserves the right to reject any or all bids, to waive any informalities, or to accept the bid which, in its judgment, best serves the interest of the Township of Denville.

Claire R. Kelly, Clerk

OFFICIAL PROPOSALS

U. S. Government

Date: October 20, 1952

INVITATION TO BID

Sealed bids will be received in the office of Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone until 10:00 A.M., E.S.T., December 9, 1952, for furnishing all plant, tools, equipment materials, labor, and services, and performing all work for the construction of 22 masonry type quarters, buildings and appurtenances at Balboa, Canal Zone and 128 masonry and off-the-ground type buildings at Corozal Townsite Construction, Canal Zone, for Panama Canal Company.

Copies of specifications, drawings, and bidding papers may be obtained from Purchasing Agent, Panama Canal Company, 24 State Street, New York 4, N. Y. Requests should be accompanied by a $40.00 deposit for each set of combined specifications with drawings. Deposit to be in form of a United States money order or a certified check made payable to "Treasurer, Panama Canal Company".

Specifications and drawings may be inspected at the following places:

Panama Canal Company, 411 10th Street, N. W., Washington 25, D. C.

Office of the District Engineer, U. S. Engineer's Office, 180 New Montgomery Street, San Francisco 19, California.

Office of the District Engineer, U. S. Engineer's Office, 751 S. Figueroa Street, Los Angeles 53, California.

Office of the District Engineer, U. S. Engineer's Office, 1709 Jackson Street, Omaha 2, Nebraska

Office of Division Engineer, U. S. Engineer's Office, Southwestern Division, 1114 Commerce Street, Dallas, Texas.

Office of the District Engineer, U. S. Engineer's Office, Box 1538, Albuquerque, New Mexico.

Office of the District Engineer, U. S. Engineer's Office, 4735 E. Marginal Way, Seattle 4, Washington.

Office of the District Engineer, U. S. Engineer's Office, Foot of Prytania Street, New Orleans, Louisiana.

or at Panama Canal Company, 24 State St., New York 4, N. Y.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. DC-3830) will be received at Goleta, California, until December 9, 1952, for furnishing labor and materials for construction of Ortega Reservoir and Control Station and Carpinteria Reservoir and Control Station, Cachuma Project, California. Location: near Carpinteria, California. Principal items are: Excavation 214,000 cu. yds.; constructing drains 17,000 linear feet; concrete 5100 cu. yds.; and other work. The work is divided into 2 schedules. Completion time 450 days. For particulars, address Bureau of Reclamation, Goleta, California; or Building 53, Denver Federal Center, Denver, Colorado.

St. Paul District, Corps of Engineers, U. S. Army, 1217 U. S. Post Office and Custom House, St. Paul 1, Minnesota. Sealed bids will be received at this office until 2:00 P.M., C.S.T., 19 November 1952, and then publicly opened, for Channel Improvement on Otter Tail River, Minnesota.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED & INDIVIDUAL SELLING OPPORTUNITY undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.50 a line an insertion.

INFORMATION:
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $17.10 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

NEW ADVERTISEMENTS Address New York City Office, 330 W. 42nd St., N. Y. 36, for November 27th issue closing November 14th

BUILDING ESTIMATOR

Experienced man, capable of assuming responsibility, to take charge of estimating and contract work. This is an exceptional opportunity with a young and growing building organization operating throughout the south. Write fully stating education, experience, references, availability and personal details.

P. O. Box 1144, Montgomery, Alabama

PUBLIC WORKS ENGINEER

For Southeast Architect-Engineer Firm.
Want thoroughly experienced and capable designer of water, gas and sewer plants and systems, drainage, paving, other municipal improvements. Top opportunity to man who can design, promote, and sell projects. Only complete and orderly applications will be considered.
P-5820, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

(Additional Position Vacant Ad on the following page)

CIVIL ENGINEER, experienced airfield pavement and drainage design. General Engineering Associates, 101 Park Avenue, New York.

DESIGN ENGINEER—Attractive future with progressive private utility for graduate with substantial water works design exp. on distrib. systems, reinforced concrete structures, cost estimating, specifications, hydraulic studies, pump performance and chem. treatment. Liberal salary commensurate with ability. P-5784, Engineering News-Record.

EXPERIENCED ESTIMATOR wanted for General Construction work. Experienced in quantity take-off and pricing. Permanent position with a future. Send complete resume and salary expected to: Brotherton Construction Co., Hill Station, P. O. Box 65, Harrisburg, Penna.

PLANT SUPERINTENDENT — New York Metropolitan college. Mechanical Engineering degree required. Experience in building construction and maintenance. Send complete resume of training and professional experience, personal data and salary expected, to P-5879, Engineering News-Record.

STRUCTURAL STEEL detailer and checker. Permanent position. Vacation. Group Insurance and retirement plan. State experience and salary expected. J. G. Goundry, Barber & Ross Company, 5th & V Streets, N.E., Washington, D. C.

STRUCTURAL STEEL Detail Draftsman and Checkers. All types of Structures. Vacation, group insurance, good working conditions, top rates. Only top quality men. Send complete written information. Bristol Steel and Iron Works, Inc., Bristol, Virginia-Tennessee.

STRUCTURAL ENGINEERS — Experienced highway bridge designers required, familiar with AASHO specifications. Apply Edwards, Kelcey and Beck, Consulting Engineers, 3 William St., Newark.

CIVIL ENGINEER-DRAFTSMAN

Graduate Civil Engineer experienced in design of structural steel, reinforced concrete, foundations and structures. Must also have experience in drafting and be capable of neat lettering. Age 25-45.

DESIGNER-DRAFTSMAN

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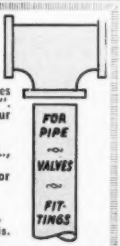

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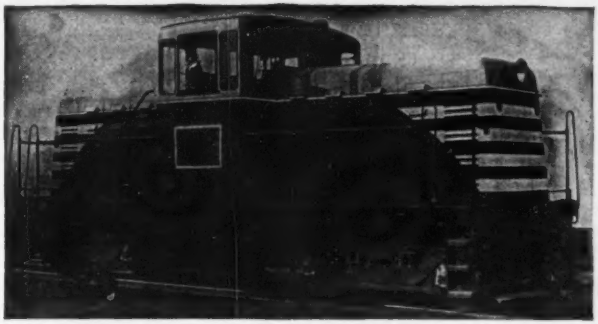

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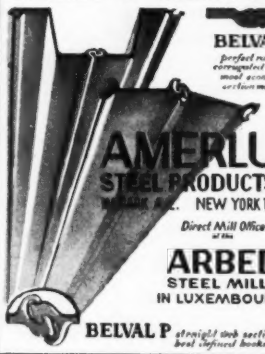

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(Continued from page 158)

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Cat No. 90 scraper can carry 31 yards

Taking a tight turn at the far end of a run and straightening out for a new load is the combination of Caterpillar's No. 90 scraper and a D8 tractor. By adding top extensions or sideboards a contractor can increase truck capacity from 21.2 to 25.5 cubic yards; the heaped capacity from 27 to 31 cubic yards. The scrapers are manufactured and shipped from "Cat's" new plant in Joliet, Illinois, and weigh 35,100 lb. Front tires are 24.00-29; rear, 27.00-33, all 24-ply. When loaded, 60 per cent of the gross weight sits on rear tires. Cutting edge is reversible and hard-surfaced and bowl is of flat, double-bottom type, made from high tensile steel. Loading and ejection are cable-controlled from rear of the tractor. The rig shown is owned by M. Livingood Inc. of Walnutport, Pa., and is working on relocation of a state highway near Shamokin, Pa. CATERPILLAR TRACTOR CO., PEORIA 8, ILLINOIS.

Reversible pump is easily installed

The Gardner-Denver model CAY centrifugal pump was designed primarily for circulating cooling water in air compressors, diesel and gasoline engines, and other water-cooled machines, and it operates with equal efficiency when rotated in either direction, according to the manufacturer.

Advantages of the reversible pump are said to include easy installation in any position on a machine, simplified piping design and adaptability to any type of drive. The manufacturer says further that it has been installled successfully on alternate sides of the same machine without turning the pump around to compensate for change in position.

The new model CAY is suitable for heads up to 50 ft and capacities up to 67 gpm. It is fitted with two prelubricated ball bearings, and has a mechanical seal that is said to eliminate stuffing box leakage. GARDNER-DENVER CO., QUINCY, ILLINOIS.

Radial saw can be adapted to fabricate metal parts

Instead of cutting wood with a standard blade on a hardwood top, the operator here is fabricating light metal parts with a metal-cutting blade on a special metal top. This represents the quick conversion possible with the new DeWalt GW, a 1-hp radial arm machine.

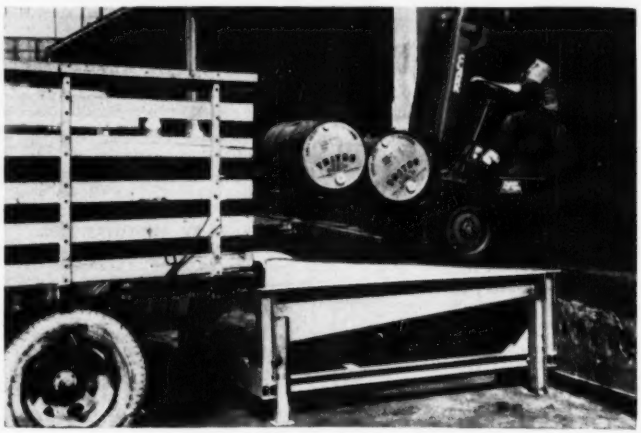
The radial type DeWalt GW not only makes straight cutoffs, but also miter, bevel, and compound-miter cuts in a matter of seconds. Because it is a radial type machine, there is no lengthy delay when changing cuts.

Metal-cutting saw blades can be used on aluminum and other nonferrous stock, or with abrasive wheels on small-size steel and other ferrous metals. Then, by simply removing the extra metal cutter top from the standard top, and replacing the metal-cutting blade with a wood-cutting blade, the machine can be converted for normal radial arm woodworking operations. DEWALT INC., LANCASTER, PENNSYLVANIA

Ramp adjusts to height of any truck

The bed of every truck that's loaded or unloaded at a platform can be of different height, but attendant worries can be discarded (along with steel plates) with a portable loading ramp between truck bed and load platform. It's adjustable manually or electrically through 24 in. to match truck height. Called the John B. Illo loading ramp, it can be installed in five minutes, and adjustments take only a few seconds for each truck. It will handle the combined weight of a fork lift truck and its load up to 10 tons on a high-traction diamond-shape plate deck. Power unit assembly consists of 110-v, ¼-hp motor direct-connected to a ⅜-in. standard Viking 350-psi hydraulic pump. JOHN B. ILLO CO., 2414 E. 57TH ST., LOS ANGELES 58, CALIFORNIA.

(*New Products cont'd on page 164*)



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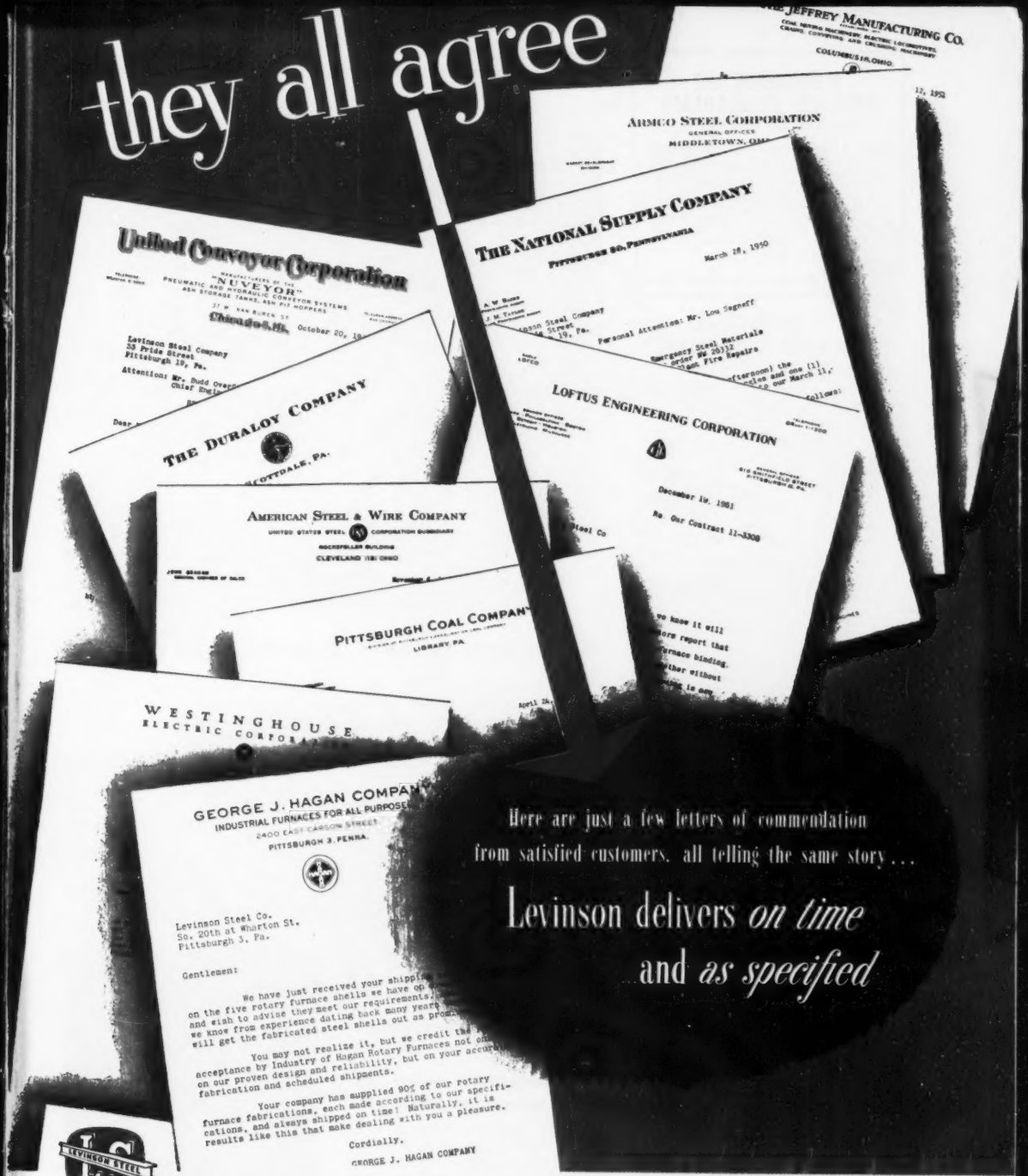
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Gortite sleeves and boots are common sights on hydraulic connecting rods, rams, guide rods and the like. They expand in accordion fashion along with the ram and protect plunger cylinders from dust and dirt. The latest use for them in the construction industry is to protect lifting and swinging rams on Joy rock drills such as the one above, which are remote controlled. In this instance the neoprene-nylon sleeves are 28 in. long before stretching and have an outside diameter of 4½ in. For other needs they can be fabricated to order, without mold charge, up to 30 ft in length and with 24-in. o.d. During recent Navy tests the flexible material showed no signs of cracking at temperatures from 220 to minus 45 deg F. A & A Mfg. Co., 2017 W. Claybourne Street, Milwaukee, Wisconsin.

Semi-automatic nailer fits most pneumatic hammers

Any pneumatic hammer with a No. 2 Morse Taper can be fitted with the new Fox Semi-Automatic nailer which will save nails, minimize fatigue of overhead nailing and speed up every nailing job to which it's put, according to the maker. Only 6 in. long and weighing only 1 lb, it has four parts, two stationary. Nails are fed head first into muzzle and driven by rapid blows of a steel plunger when the trigger is pulled.

It requires little or no maintenance, since there is no build-up of destructive heat or friction. Toenailing can be accomplished with ease and it's fine for crating as well as for fastening formwork, plywood, framing etc. It was first made three years ago and has been undergoing job tests for 2½ years. Fox Nailer Corporation, 3706 Airport Way, Seattle 4, Washington.

(*Products continued on page 166*)

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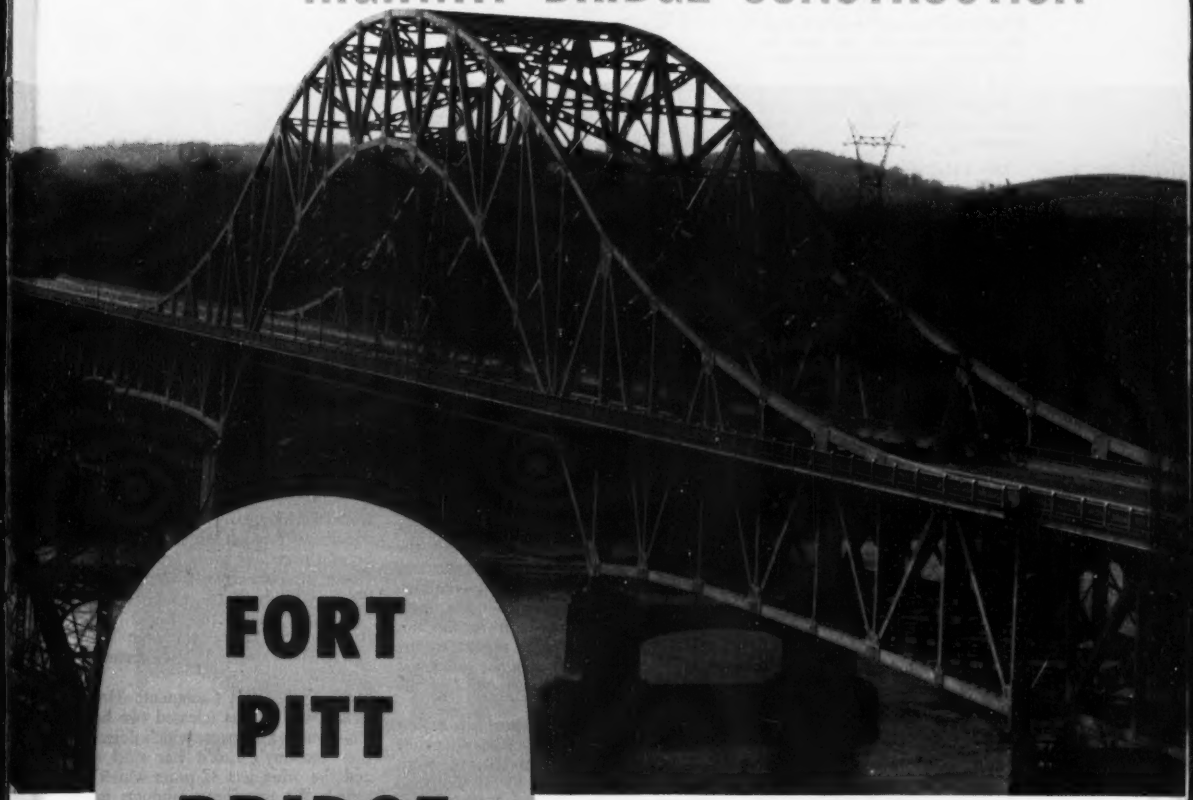

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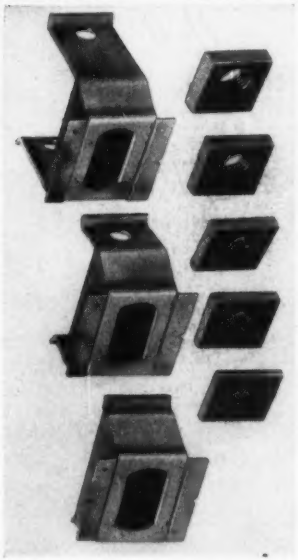

Adjustable insert has off-set hole in nut

A new type of fully adjustable insert for use in concrete eliminates time-consuming "fishing" to get the bolt started in the nut after the nut is placed in an insert. The combination of an elongated hole in the insert face and an off-set hole in the nut makes it possible to put the nut on the bolt before placing it in the insert and then to adjust it to any point of the compass.

They are called Super-Grip inserts and the manufacturer claims that they have other advantages too: they can support 1,500 to 2,400 lb; V-shaped notches in the face and two center grooves on the side simplify alignment of the insert on forms. Inserts are of heavy gage steel and will accommodate bolt sizes from ¼ to ¾ in. SUPER-GRIP ANCHOR BOLT COMPANY, INC., 3333 N. 22ND STREET, PHILADELPHIA 40, PA.

New Product Briefs . . .

Seismic Building Design—Design methods for the use of Fenestra D and AD steel building panels in the construction of wind-resistant and earthquake-resistant buildings are published for the first time in a new 10-page brochure.

This booklet should be of particular interest to architects and engineers, not only in earthquake zones, but in all parts of the U. S. where there is an interest in the lateral stability and economical design afforded by the use of steel building panels. Included are history and findings of a testing program carried out in Southern California under the supervision of the California Institute of Technology. Formulas and details of the Fenestra building panels diaphragm designs are presented in clear fashion for the use of engineers. DETROIT STEEL PRODUCTS COMPANY, 3159 GRIFFIN STREET, DETROIT 11, MICHIGAN.

Blackhawk Idea Book—Undoubtedly one of the most interesting booklets to come across our desk in quite a while is the 64-page contribution made by Blackhawk Manufacturing Company. It is titled "1001 Valuable short-cuts with Hydraulic Tools and Hand Tools", and is slanted toward the industrial, construction, electrical, mining, marine, aviation, oil and other industries.

Chapters are headed Ideas for Production, Ideas for Maintenance, Ideas for Testing, Ideas for Rescue Work, Ideas with Wrenches, etc.

Illustrations show a variety of applications from house-moving to bridge-lifting; from deflecting engine frames to pre-stressing concrete bridge slabs; from checking load tests on cranes to equalizing tension on steam fittings. Several pages list every type of Porto-Power attachment and electrical set. There is another section entitled "How to Select the Right Jack". BLACKHAWK MANUFACTURING COMPANY, MILWAUKEE 1, WISCONSIN.

Steel Sash and Casements—Hope's Windows Inc. has released two booklets—one is a 12-pager which describes the company's Lok'd Bar steel sash and the other is a 32-pager which describes the remaining products made by the company, including doors, glass block windows, picture windows, casements, security windows, etc.

The former shows in part the list of recent installations of their Lok'd Bar windows and the latter has complete architectural drawings of the various components made by the company. HOPE'S WINDOWS INC., JAMESTOWN, N. Y.

¾-Yard Shovels—A 4-color, 8-page catalog describes Model 75A and 75B shovels and the 75BT truck crane made by Gar Wood. It describes construction and operational features such as the fluid coupling, right-angle gear drive, power-actuated hoist clutches and heavy-duty conical rollers which eliminate pin strain. GAR WOOD INDUSTRIES, INC., FINDLAY DIVISION, FINDLAY, OHIO.

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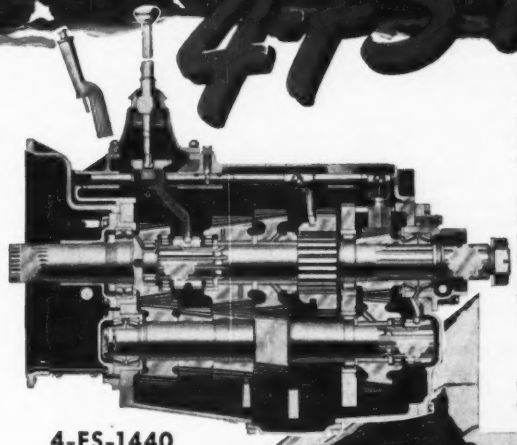

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VITAL STATISTICS

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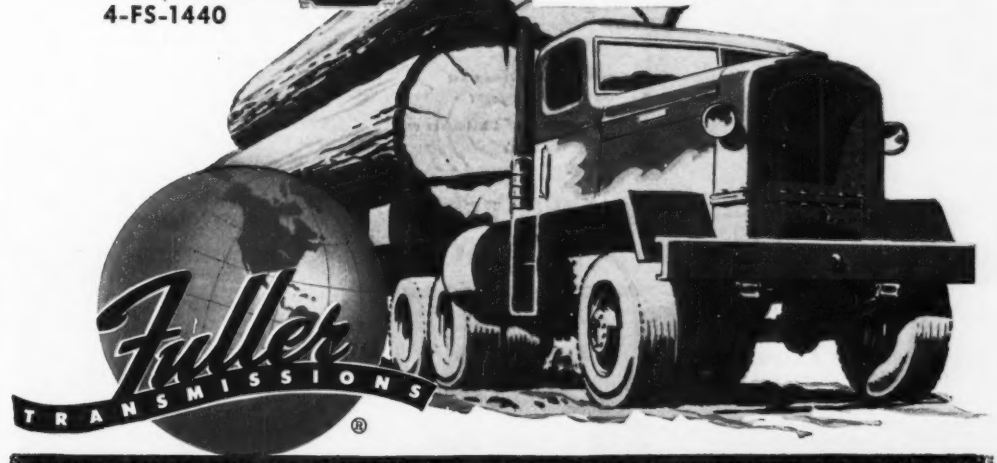

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PUBLICATIONS

Marble-face building blocks—"A finished wall in one operation" is the theme of this 4-page folder on marble-face building blocks, the results of a scientific process which permanently bonds a face off marble chips and marble dust set in a colored cement matrix to one or two sides of a cinder or concrete block. Each block is said to have perfect arrises, square corners and parallel faces. Thus, in one operation the bearing wall and washable face are erected at the same time. MARBLE FACE BLOCKS, INC., 565 FIFTH AVENUE, NEW YORK 17, N. Y.

Reversible Clamshell Bucket Teeth—Of interest to owners and operators of clamshell buckets in the excavating and heavy construction field is a new reversible and replaceable cutter recently announced by the Blaw-Knox Company. The new unit replaces the old-type, one-piece tooth presently used. The new tooth has a base which is permanently attached to the scoop, or lip, in the usual manner. A reversible and renewable tip which fits into a slot and wedges itself into the base is the newest idea.

Bulletin 2399 fully describes this new accessory and is available from BUCKET DEPARTMENT, BLAW-KNOX COMPANY, FARMERS BANK BUILDING, PITTSBURGH 22, PENNSYLVANIA.

Hollow Metal Doors—A complete new catalog of information on doors, frames and hardware, has been issued by Detroit Steel Products Company. The 16-page catalog is profusely illustrated with pictures of the types and sizes of door-frame-hardware units in the Fenestra line.

The catalog gives installation instructions, descriptions, uses and complete specifications. Also included are accessories in the hardware and equipment line, such as hinges, push plates, head bolts, etc. DETROIT STEEL PRODUCTS COMPANY, 2250 EAST GRAND BLVD., DETROIT 11, MICHIGAN.

Telsmith Equipment—A new 36-page general catalog—No. 266R—has been prepared by Smith Engineering Works and describes Telsmith equipment for mines, quarries, gravel pits, etc. It illustrates and describes the complete line from crushers to bin gates.

The first section contains information on Telsmith primary and secondary crushers; gyratory breakers; jaw, gyrasphere, intercone and roll crushers; followed by apron and plate feeders; scapling, sizing and washing screens.

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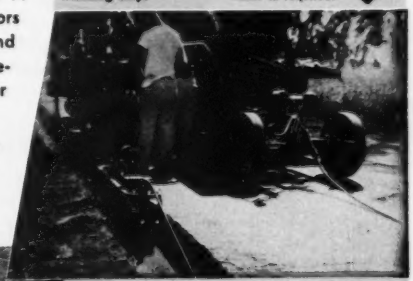

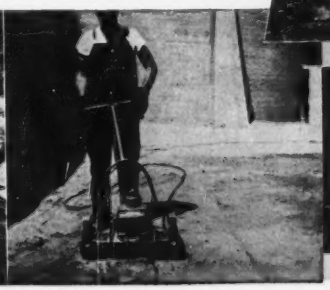

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PUBLICATIONS

mation on belt and chain elevators, conveyors, bin gates and Telsmith portable crushing plants. The highly-illustrated catalog gives comprehensive tables on sizes, capacities, weights and power requirements. SMITH ENGINEERING WORKS, 532 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN.

Bituminous Paver—A new bulletin on its Model BP-6 bituminous paver has been issued by Pioneer Engineering Works, Minneapolis. The 12-page booklet is fully illustrated, explaining operating details and including complete specifications for the machine.

Features claimed by the manufacturer are: almost instant width adjustability from 9 to 12½ ft., oscillating compaction and finishing controlled with tiltable screens; automatic, positive matching to level of adjacent course, curb, gutter or other structure. PIONEER ENGINEERING WORKS, INC., MINNEAPOLIS 13, MINNESOTA.

"Attachments for your Caterpillar Diesel Engine"—is a 32-page booklet published especially for anyone considering or now owning an engine installation.

It contains the most complete selection of attachments ever presented by Caterpillar in booklet form. These attachments are pictured and described in such a way as to show just where they are used and what they do.

The booklet is fully indexed and starts the reader at the engine base and concludes with a discussion of exhaust devices. In between are many other attachments for Caterpillar's 12 sizes of industrial, electric-set and marine diesel engines. The booklet is labelled Form 30338, and is available from any Caterpillar dealer or from CATERPILLAR TRACTOR COMPANY, PEORIA 8, ILLINOIS.

Movie on Home Sewage Disposal—How the home sewage disposal system affects the health, safety and comfort of an average family is told in a new movie entitled "Permanent Investment" made for the Cast Iron Soil Pipe Institute.

The film explains to families (and contractors) planning to build new homes that every building is a compromise between what the owner wants and what he can afford. It further explains that an owner always can add extras later, but his family's day-to-day welfare depends on the bare essentials. For further information contact CAST IRON SOIL PIPE INSTITUTE, 1627 K STREET, N. W., WASHINGTON 6, D. C.

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EDITORIAL

New people, same problems

THE ELECTION solved none of the basic problems that are the particular concern of engineers, architects and construction men. But it did furnish new political leadership to deal with them both in Washington and in a number of states. Indeed, in voting for a change, a majority of the American people were banking on the hope that a new, fresh approach to some of these problems would produce some acceptable solutions. A goodly number of these problems affect construction.

First in importance to the national welfare is the problem of safer, more adequate highways. In one of his addresses General Eisenhower placed a network of modern roads second in importance only to an adequate supply of the most modern weapons of war. So the road need is recognized. The problem is one of financing—greater federal aid, higher gas taxes and toll revenue bonds all being available, and each requiring federal-state cooperation. Joint cooperation is also indicated to secure a more logical national highway net, which will integrate the toll highways with the free road system.

ANOTHER PROBLEM of fundamental importance relates to the need for a national water policy. A good start is available in the report of the Cooke Commission, and a fresh look at its recommendations may be able to dissolve the major objections that have been voiced against some of them.

With or without benefit of a broad water policy, however, numerous questions involving water resources face the new administration. There is the matter of stream pollution and the degree of federal and local participation with private interests. There is the matter of river development jurisdiction as between the Bureau of Reclamation and the Corps of Engineers, as well as the scale of flood control and irrigation to be undertaken. And there is the broader question of method of river development in which the federal valley authority idea has clashed with that favoring local initiative.

With respect to all of these, the President-elect's frequent reference to too much centralized government suggests the direction the fresh new look will take. It also suggests that less pressure will be exerted on Congress to approve such controversial projects as Hell's Canyon, and in general to expand the public power empire of the Department of the Interior.

But even if federal handling of hydro power development is due for de-emphasis, the problems of the international section of the St. Lawrence River and added power at Niagara Falls must be faced. Canada threatens to build the St. Lawrence Seaway alone, and last week said that the 1941 agreement on joint U. S.-Canada development was dead. Are we to accept the situation or seek a new agreement? As to St. Lawrence power, is the federal government to be the development agency or is the work to be assigned to the New York State Power Authority? And as to Niagara Falls power, is New York State or the private utilities to be the chosen instrument? These are problems that the election dropped in the lap of the new administration.

A THIRD PRESSING PROBLEM is that relating to the continuance of economic controls. Of those affecting construction, materials allocations are no longer necessary; price controls were never of any value and wage controls have outlived their usefulness. Are they to be maintained until the laws that set them up expire next year or will they be dropped as quickly as possible? The decision will probably be left to the new administration.

The necessity of continued federal aid for hospital and school construction was recognized by both candidates in the campaign. Politically, and as a service to the people, such sympathetic attention was necessary. The problem relates to amount and method. Somewhat the same thing can be said about public housing, with the addition that the principle is also subject to review. Is it wholly bad or are some of Senator Taft's early views on its advantages to be advanced again? Congress, already having cut the federal public housing program to inconsequential size, can let the matter rest. But the problem remains.

Foreign policy also contains problems of concern to construction and those who work in it. Aid to underdeveloped countries through the Point 4 program is one example. It has been indicated that the new administration will take a stiffer attitude toward foreign countries, but technical assistance has rested on claims that it strengthens our allies and secures needed raw materials. How is this stiff attitude to be applied, and when and where?

Another facet of foreign policy relates to the amount and type of expenditures by the Mutual Security Administration. Those that affect construction are increasingly for airbases and on a reducing scale for such things as power facilities. Is this pattern to continue?

Many problems of less magnitude also face the administration and various segments of it. Whether to give increased funds to the National Science Foundation so that it can expand its research and scholarship programs is one. Others relate to building materials research and building codes; to restraints of trade in the building industry; to increased mortgage insurance; and to a speed-up in mapping the country's topography.

These then are some of the problems that plague the nation as a new administration takes over the reins of government. A hopeful people commend them to its leaders for a new, fresh try at solution.

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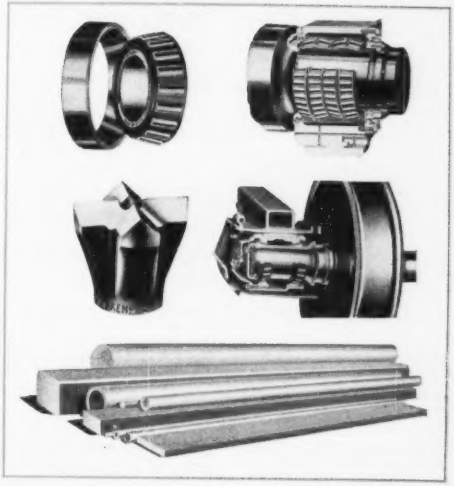
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